The Iron Age

A Review of the Hardware and Metal Trades.

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The Construction and Management of Roll Trains for the Manufacture of Heavy Bars, Rails and Girders.

BY WILLIAM HEWITT, M. E.

PART V.—*Appliances for Economizing Labor at the Rolls.*

(Concluded).

This principle of the machine described in the concluding paragraph of the preceeding number of this series, is evidently the correct one, and it is strange that its mechanism was never improved upon and carried into greater effect at Consett. That, however, had already been done in this country by Mr. Charles Hewitt in the invention which we are about to describe. It was patented in 1859, and the patent renewed in 1873. The machine has never been erected precisely as described in the specification. But a rude and incomplete arrangement of the kind was used for a number of years on the beam mill at the works of the *New Jersey Steel and Iron Co.* The invention was made in entire ignorance of the machine at Consett just described, but the inventor had the pleasure of witnessing this machine in operation shortly after patenting his own. The engraving here presented illustrates the machine as patented in 1859, with a few slight modifications.

A number of levers C C, which have for their fulcra the rock shafts *k k*, mounted in slotted bearings upon the stands D D (Figs. 1 and 2), support at the ends of their arms farthest from the train the floors A and B (Fig. 1), while from the ends of their arms nearest to the same hang the weights W W (Fig 2). The floor A is given a greater motion than the floor B by making the arms which support it longer than those which support B. If the rolls are 26 inches in diameter, which is a common dimension, A may be made to have a motion of 31 inches and B 21 inches, the former always rising flush with the upper grooves and falling 5 inches below the lower ones, while B rises within 5 inches of the upper ones, and falls flush with the lower. As the iron to be rolled must descend on the floor A, which has the greater motion, and ascend on the floor B, which has the less, the weights W W are so regulated that the floors with the iron to be rolled will lift the weights in the one case and be lifted by them in the other. In order to secure this effect the energy exerted by the iron and floors in descending must be greater than the resistance offered by the counterpoises in ascending, and the resistance of the former in ascending proportionably less than the energy exerted by the latter in descending. The total weight of the counterpoises may be determined from the formula:

$$W = \frac{\sqrt{(r_1+r_2)F^2+(r_1+r_2)^2FI+r_1r_2I^2}}{r},$$

in which r is the length of the arms from which each of the separate weights re suspended (all of them being of the same length); F, the weight of either floor, r and r_2 the lengths of the arms supporting A and B respectively; and I, the weight of the iron, assuming each arm to move through the quadrant of a circle.

The counterpoises consist of large iron tanks containing water in sufficient quantities to furnish the required weight. By increasing or diminishing the supply of this fluid the machine may be readily adapted to the different weights of metal desired to be rolled. A small steam cylinder O (Fig. 2) is employed for moving the floors toward and from the train, and for overcoming the friction of the parts, and a boy stationed here is all that is needed to operate the complete machine.

The operation is as follows: The iron is first brought to the floor A, and entered in the first groove; passing through this, it is discharged on the floor B. The motion then begins. The boy admits steam behind the piston by means of the handle h (Fig. 2), and thus causes the shaft *e*, and bar *f* (Figs. 1 and 2) to rotate to the left. The latter pulling the rods *i i*, and *l l* with it, draws the arms *m m* toward the train, causing the shafts *k k* to rotate, lifting the floors, and at the same time lowering the counterpoises, each moving through an arc depending on the length of the arm supporting it. The shafts *k k* cease to rotate when the guiding pins *g g* reach the bottom of the curved slots in which they work, and the floors, levers and counterpoises are then drawn bodily toward the train until the guiding pins reach the ends of the straight slots, when the upward movement ceases, the floors then being in the position shown in the figure. In the meantime the arm P (Fig. 2), which is attached to the floor B, at *v*, turning on the stationary pivot *q*, cause the upper movable portion of this floor to roll on the wheels *z z*, far enough sideways to carry the iron opposite the next groove in the rolls. A similar arm P' is attached to the floor A, but on the opposite side at *v'*, so that either floor always moves in a contrary direction to the other, and each through equal distances. The side motion of the floors may be varied to correspond with different sets of rolls by adjusting the position of the pivots *q* and *q'* in the curved slots shown in Fig. 2. This position is determined as follows: Let x represent the required side motion; a, the angle which either arm makes with the floor to which it is attached, when in its highest position; b, the angle which it makes with the same when in its lowest position, and s, the vertical rise or descent of the floor; then, we obtain the formula,

$$x = \cos b - \cos a = \sqrt{\sin^2(a-b)-s^2}$$

The forward movement of the floor B is greater than the backward movement of the same while rising, and thereby the entering of the iron in the second groove is secured. The iron then passes through and is discharged upon the floor A. The boy now admits steam in front of the piston, when the reverse of the above motion takes place, the backward movement of the floor A being less than the forward movement which it receives in its descent, thereby securing the entering of the iron in the third groove. The same motions are then repeated until the iron is finished. The only manual labor expended therefore is in transferring the pile from the furnace to the train, and even this might easily be done by machinery with advantage. Beside the buggyman and the boy who operates the machine, the only other person actually required is a finisher, for adjusting the rolls and superintending the train generally. It may possibly be found necessary to employ an extra man, so that one may be stationed on each floor for the purpose of entering the iron between the rolls in case the machine should fail to do this, which is not probable, however, as the iron will be rolled much faster, and, therefore, its temperature will be less liable to become low enough to cause this difficulty.

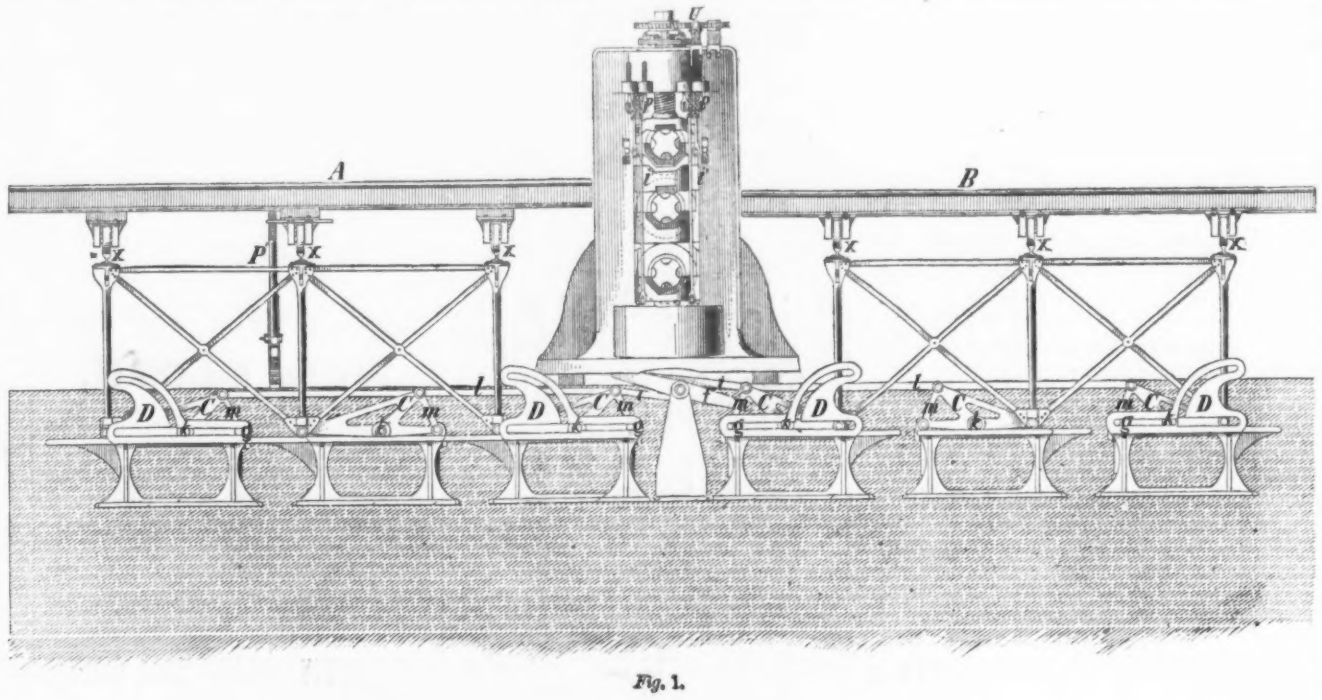

Fig. 1.

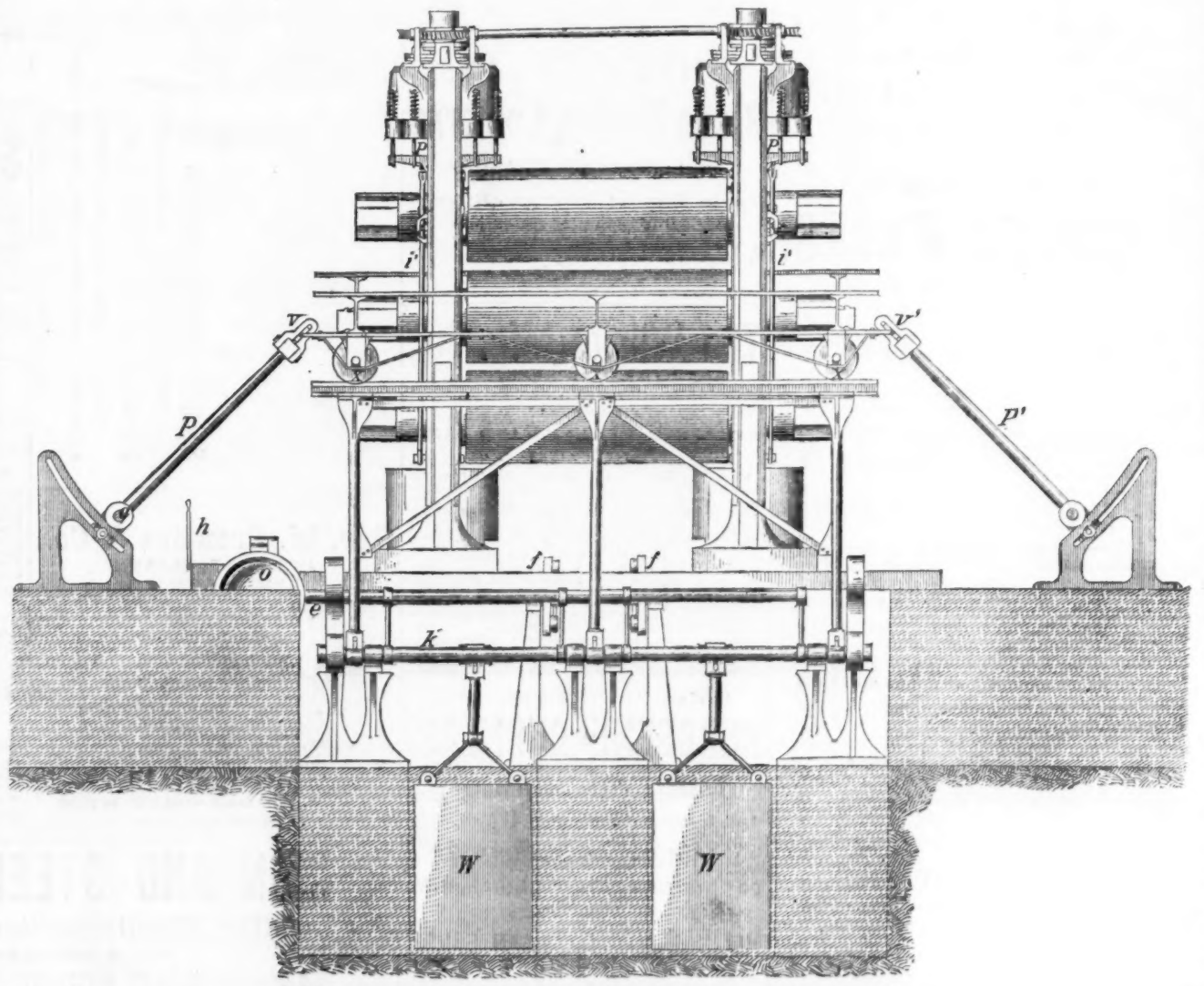

Fig. 2.—THREE-HIGH ROLLING MILL, WITH LIFT.—BY CHAS. HEWITT, OF TRENTON, N. J.

In the figure the machine is shown attached to a plate mill. In this case the side motion of the floors is unnecessary, and the arms P and P' superfluous. We have shown it in this connection, however, in order to illustrate the device of the "balanced top and bottom rolls," already referred to in connection with the Universal mill. Part of the mechanism is hidden in the figure, but a description will make the whole thing clear. The carriers which support the top and bottom rolls are suspended from the rods *i i*, fastened at the top to short chains which pass around the pulleys *p p*, each side of one chuck, at each end, being connected to the other side of the other chuck. The pulleys themselves are suspended from short rods passing through lugs on the caps of the housings, the upper ends of the rods resting on stiff springs that bear upon the upper faces of the lugs. This arrangement is provided for the purpose of relieving the rod *i i* from any inordinate strains that might be brought upon them by slight deviations of the bottom roll from its proper position while under pressure. The bottom roll bears against large screws in a precisely similar manner as the top roll does, excepting that the arrangement is inverted. At the top of each housing a worm *v* works into two wheels, the larger of which is keyed to the screw in the center of the cap, and the smaller one to a shaft which runs through an aperture extending the entire length of the housing. The lower extremity of this shaft is connected to the bottom screw by spur wheels of such dimensions that the motion imparted to this screw will be equal to the one at the top. These wheels are not seen in the figure, as they are inclosed in a recess beneath the housing. By turning a handle on the worm *v*, the top and bottom rolls may be moved toward or from the middle roll, as desired, the only force required being that necessary to overcome the friction. This is the arrangement that we spoke of in connection with the "fixed middle roll" adopted by Mr. Henry Burden. It is much more compact than the old one, and places the rolls under more ready control of the workman, as the adjustment for each pass may be quickly and easily made.

Concluding Remarks.—We have endeavored in the foregoing paragraphs to trace the gradual rise and development of the two most important systems of heavy rolling at the present day, the English and the American, and we have attempted to discuss the merits of each with impartiality. It has been our firm conviction all along that the American system is the superior of the two, and it has been demonstrated by mathematics that its efficiency is considerably greater. Moreover, with the appliances above described attached, although the first cost may be increased, yet in the long run it must certainly be the most economical mill in the world. It seems strange to us that other nations are so slow to comprehend its advantages, but the reason may be owing to the fact that the English, who have for a long time led all other nations in mechanical invention, have expended all their thought and ingenuity on the system of reversing, and with the pride and obstinacy peculiar to their race refuse to acknowledge the superiority of any other system that is not of English origin. The reversing mill has become a hobby with England, and every one who has ever cherished a hobby knows how difficult it is to discard it. We believe that the time will come, however, when England will be compelled to adopt the American system.

The Edgar Thomson Steel Works, of Pittsburgh, Pa., have lately rolled and delivered to the Pittsburgh, Cincinnati and St. Louis Railroad Company a large order of steel rails of sixty feet in length each. Iron rails of about sixty feet were successfully rolled in England some time ago, and mention was made of the fact in the London *Times* as a remarkable event in the manufacture of railroad iron. The difficulty attending the production of rails of more than thirty feet in length is that of handling the mass of steel to be rolled. A thirty foot rail weighs 650 pounds, and a sixty foot rail is 1300 pounds in weight. In bulk this is an unwieldy mass, and hitherto it has been found inconvenient to manipulate it with the machinery in use in rolling mills. The rails manufactured for the Pittsburgh, Cincinnati and St. Louis Railroad were inspected by a competent engineer in the employment of the Pennsylvania Railroad, of which it is a division, and were pronounced equal to any steel rails ever used in this country. The successful manufacture of these rails is spoken of among railroad builders as an important achievement.

The Titusville (Pa.) *Herald*, of the 23d ult., says: We yesterday saw in practical operation at the Gibbs-Sterrett Manufacturing Company a new furnace for utilizing scrap iron. The process is extremely simple. The scrap is first introduced to the furnace in heaps, where it is brought to a welding heat. After this it is placed under a steam hammer, and hammered into ingots. These ingots are again introduced to the furnace, and the operation of heating and hammering is repeated. The conversion is now complete, and the iron one homogeneous and solid mass of metal of very superior quality. The advantage of this forge is very great, particularly in this section of country where there is so much scrap. It brings the value of scrap here to the same price as it is in Pittsburgh, deducting the freight. This furnace can convert from 2000 to 2500 pounds of finished iron per day, with the expenditure of not quite a ton of coal. A new 2500 pound steam hammer is about to be ordered, and, when placed in position, double the quantity of scrap can be converted.

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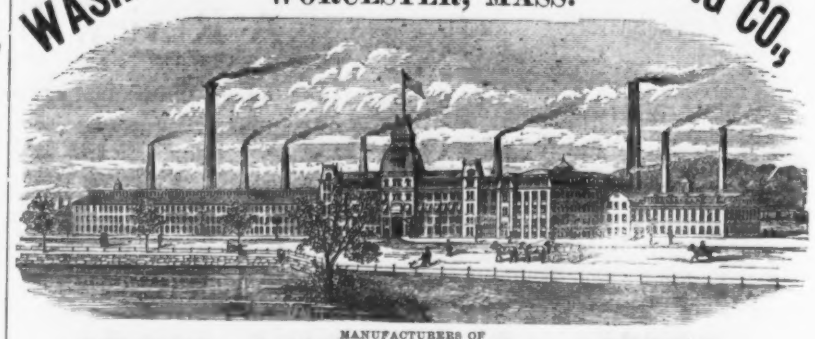

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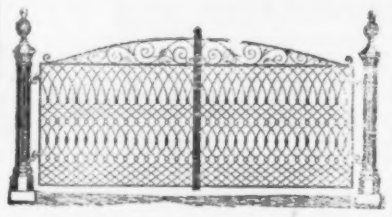

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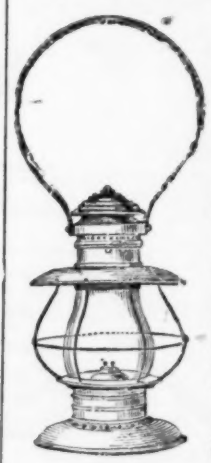

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Application of Electro-Magnetism to Railway Wheels.

In a paper on this subject, by Mr. Dreyfus, we find the following:

Attempts have been made, during a considerable period, to utilize electro-magnetism in working railways; sometimes directly as motor force, sometimes for brakes, sometimes to increase the pressure of the wheels of locomotives against the rails.

Amberger first employed electro-magnetism thus as motive force in 1851. In 1865, Bellet and De Rouvre showed to the Societe des Ingenieur Civils a model locomotive meant specially for postal service, but they had also in view the application of their system to trams. In such cases it is a question of whether zinc or coal is dearer, as fuel.

Amberger also proposed, in 1851, the employment of electro-magnetism for brakes; flat electro-magnets should be made to act, at a given moment, on the rails. This would effect a great saving of wheel tires, the friction and wearing being on the rails; but the method was never thoroughly tried. The first serious experiment with an electro-magnetic brake was made by M. Achard, who is still continuing his observations, and hopes to bring them to a successful issue.

Increase of the pressure of a locomotive's wheels against the rails would favor the action of friction (the mean co-efficient of friction 0·17, sometimes fully under 0·1); and the drawing power of the locomotive cannot, of course, exceed the friction of the wheels on the rails. An increase of the traction force can be obtained by increasing the weight of the locomotive; but such an increase of dead weight is especially disadvantageous on inclines, and the more so that the weight of the locomotive must be calculated according to the greatest incline present on the line. It has often been attempted, therefore, to help the friction with electro-magnetism, but hitherto without any satisfactory success. A new arrangement for this purpose, by a Swiss engineer, M. Burgin, has lately been tried on the North Eastern Railway, in Switzerland. After a brief historic survey we shall describe it.

The first idea of applying electro-magnetism in this way may have been given by a lecture experiment of Professor Eisenlohr, in Carlsruhe, who made a magnet of a horse-shoe-formed locomotive axle, by winding round it 500 m. copper wire, of 4·5 mm. thickness, so that, when the wire was traversed by a current from 20 Grove elements, the magnet would bear 500 k. In 1846 Dr. Wright proposed to make the wheels of locomotives magnetic, and estimated that each wheel might thus acquire an attractive force of 1000 k. on the rails; he also remarked that the force of attraction might be rendered variable. There is no record of the proposal having been carried out. When M. Nikles was consulted, in 1851, by MM. Amberger and Cassal, as to a physical means of increasing the pressure of locomotive wheels, he recommended electro-magnetism. In his first arrangement a horse shoe electro-maguet was fixed to the body of the locomotive, between two pairs of wheels; its poles were about 4 mm. from the rails. A small model acted well on an incline; the motive force was derived from a weight connected with the axle by a cord passing over a pulley at the top of the incline, another weight was suspended from a cord passing to the locomotive over a pulley at the bottom. Soon after, M. Nikles replaced this electro-magnet by coils enclosing the lower part of each wheel nearly to the rail, each coil 250 m. of copper wire; they were attached to the frame of the locomotive. Good results were had thus with a small model on a changeable incline. Thereafter, similar experiments were made on a 20 per cent. incline, with a pair of locomotive wheels 1·10 m. diameter, and with 16 battery elements; in dry weather the friction was about 350 k.; the adhesion through electro-magnetism 450 k. (or, supposing the coefficient of adhesion 0·1, 4500 k.); in damp weather the friction went down to 100, while the electro-magnetic adhesion was weakened only about 50 k. A thick layer of tallow on the wheels brought down the magnetic adhesion to 400 k. The magnetic adhesion, therefore, for each pair of wheels might be estimated at about 1000 k. The expenditure in acid and zinc during ten hours' uninterrupted service was about 11·2 m. It was thought deducible from the experiments that the velocity of rotation of the wheels did not compromise the magnetic action, but from experiments on the Paris and Lyons Railway the opposite was proved; for in the heavy train, which moved with slow velocity up an incline of 10 in 1000, scarcely 9 per cent. increase in adhesion was gained. Nikles and Amberger, therefore, gave over magnetizing the wheels with such coils.

The cause of non-success in M. Nikles' first arrangement lay in the distance of the magnet from its armature; in his second it lay in the fact that the position of the pole could not shift with sufficient rapidity. During the experiments on the Lyons Railway, M. Nikles thought of magnitizing the whole circumference of the wheel, and devised a special arrangement for this purpose, which, however, was never carried into practice.

In 1859, Mr. Gerrel, in America, magnetized the lower part of wheels by an arrangement similar to that of M. Nikles. Each coil contained 823 m. copper wire, No. 8, in 288 windings; the battery consisted of 16 Grove elements, and had a zinc surface of about 1935 sq. c. The steam pressure could be raised to 8·6 k. without the wheels slipping on the very smooth rails, but to 15·9 k. if the wheels were magnetized; with good rails even to 22·7 k. and 40 k. Similar experiments were made by M. Black in 1859.

In 1865 a new arrangement was tried on the Central Railway, in New Jersey. The copper coils, fixed round the tires on the inside of the wheels, made the two wheels on one axle poles of a single magnet. The experiments, continued more than a year, gave an increase of about 40 per cent. in adhesion. These American experiments were discontinued, because at that time it was not understood how to produce, with a dynamo-electric machine and comparatively small expenditure of mechanism, very powerful electric currents.

In M. Burgin's system the entire axle with its wheels is also turned into a magnet with fixed poles. But he envelopes the axle itself with the wire, and with increasing thickness of winding toward the wheels in locomotives that have external cranks, but with uniform thickness in those with internal. In the case of coupled wheels, the winding is so arranged that there is an alternation of poles, the piece of rail between two wheels forming a closed armature. This mode of winding allows an increase of the number of turns, and, consequently, stronger magnetization. A small locomotive model (but without engine and boiler), with three pairs of wheels, and external cranks, was placed on a 30 per cent. inclined plane, and the coils were connected by long wires and a commutator with five Bunsen elements. The driving force was supplied by a weight of 12 k., the cord of which passed round the three axles. The wheels of the model (its weight was 8·5 k.) slipped in position, if the weight was allowed to run, and the circuit not closed; but when the current flowed, the model went up the incline. If the brake of the model was applied, the latter remained in position on the plane while the current was flowing; but on interrupting the circuit, the wheels began to slip on the rails, and the model slid down with increasing speed; when the current was admitted again the model stopped, notwithstanding its acquired velocity. On a plane of 100 per cent. incline, the locomotive could be held fixed only when the current was flowing and the brake applied.

A New Aero-Gas Engine.

Mr. Brayton, inventor of the gas engine which bears his name, has invented a new engine which is said to be a great improvement upon the old one. Oil and common air are made to take the place of steam, and the cost of running it is much less than that of the old engine. The power is obtained as follows: A can is attached, containing the oil, which is introduced by a pump into the cylinder of the engine. The oil enters a burner in the cylinder in the form of a spray. An air pump forces air into a reservoir at the bottom of the engine, from which, through an induction pipe, it passes into the cylinder. There it comes in contact with the oil in the burner and is instantly carbonized. The combustion, which is occasioned by simply lighting a match, results in an expansion of the air at the rate of six to one, and thereby the power is produced. A little jet of air constantly passes around the induction valve opening into the burner, and keeps the flame alive when the valve is closed.

The required pressure is obtained within a minute after starting, and is regulated as in an ordinary engine. The oil engine is therefore always ready for use, without causing any expense to the owner when not in actual operation. It has no highly heated surfaces, requires no mason work in its setting, and is free from sparks, smoke and cinders.

The power of the engines ranges from half a horse-power to 30 horse-power, but it is hoped to build some still more powerful. Their rated power is remarkably uniform, and is said to far exceed that of steam engines rated at the same figures. Persons who found that a five horse steam engine gave them insufficient power have reported, after using five-horse oil engines, that they furnished more power than was required.

The oil used is common crude petroleum, which can be bought by the barrel for 8 cents a gallon. A five horse-power engine consumes from 5 to 6 gallons during a day's constant use. As there is no boiler, a licensed engineer is not needed to operate it, and in this respect alone a great saving can often be effected.

The engine can be examined at the establishment of the New York and New Jersey Ready Motor Company, which is now at No. 24 Cliff street, but will be removed early next week to No. 111 Liberty street. It can also be seen at a number of places where it has been adopted instead of steam.

We have the following on the authority of our veracious contemporary, the Danbury *News*:

A Danbury man is evolving a plan for taking on passengers without stopping the train, and thus save time in running. He thinks a rack formed of a scoop made of netting, with a back to it, and a horizontal bar 10 inches below, will do it. This is to be attached to the car and worked on a powerful hinge. He was in Merill's grocery with a rough model of his machine last evening, explaining its work to an interesting auditory. His idea is to have the passengers stand in a line on the station platform with their backs to the approaching train, and near enough where it will scoop. On the approach of the rack the horizontal bar strikes the expectant passenger in the hollow back of the knees, which causes him to lop backward, when he is caught in the scoop and whirled into the car; and the next forward passenger, and so on, until all are taken up.

"How are you going to land them people who stop at way stations?" asked a disagreeable person who was sitting on a soap box.

"Land 'em?" cried the inventor, in a tone of unqualified disgust. "Who said anything about landing 'em? That's their own lookout, I guess? A railroad takes them to the place where they are going, an' that's all it agrees to do. I suppose you'd expect a railroad company to hunt you up a hotel, an' carry your trunk up to the room, an' cook your supper, an' tuck you up in bed, an' wind up your watch, wouldn't ye?" and the speaker glared at the interrupter with such intensity as to cause him to shrink up fully one-half.

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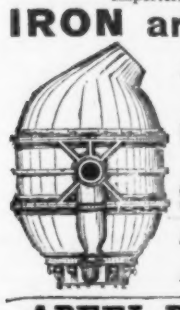
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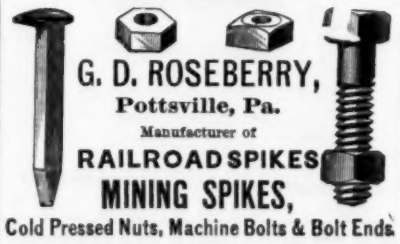
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Hard Chill Rolls are guaranteed to be uniform and made to any depth of chill, to suit.
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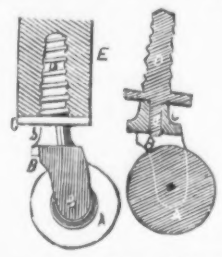
New Patents.

We take the following abstract of new patents, recently issued, from the official record:

FURNITURE CASTER.

To J. F. Ohmer, Dayton, Ohio.—The screw, flange, and connecting rivet are formed solid, of a single piece of metal, and riveted or

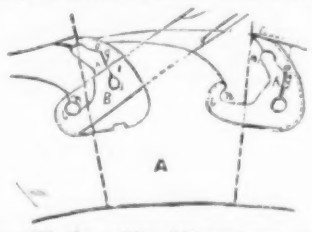


headed down on the horn of the caster, the construction being inexpensive, and giving increased strength and solidity.

The solid screw D, the disk or flange C, and the rivet *d*, formed of one piece of metal, in combination with caster horns B.

SAW.

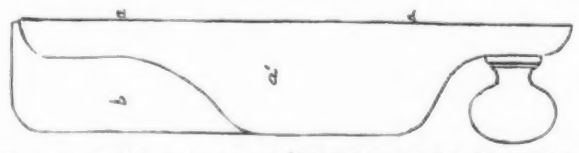
To Warren P. Miller, New York, N. Y.—The shank pierced at *i* and slotted at *h*, in combin-



ation with the cutting bit *e* and saw plate A, the latter being provided with a socket for the reception of the shank and bit.

BENCH PLANE.

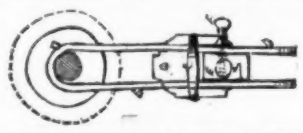
To Justus A. Traut and Henry Richards, New Britain, Conn.—The combination of the



wrought metal stock or shell *a*, having two broad and strong sides, *a' a'*, with a suitable filling, *b*.

KEY FASTENER.

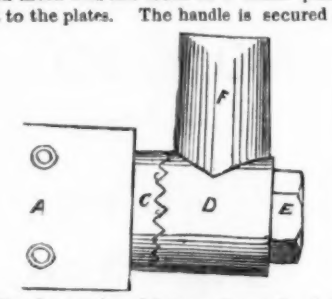
To W. W. White, New York, N. Y.—The combination, with a bow, D, hanging from the



knob shaft and passing through the key-loop, of the block E, receiving the arms of bow on each side thereof, and provided with a set screw F.

CROSS-CUT SAW HANDLE.

To Chas. M. Tanner, Defiance, Ohio.—The saw is attached to the handle by means of two metal plates, each having half of the shank, on which is secured a sleeve-socket having ratchet-teeth, which mesh with like teeth on a collar placed next to the plates. The handle is secured in

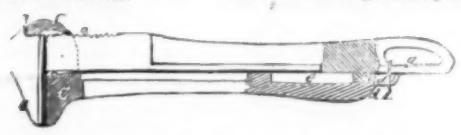


position by a nut working on the end of the shank, and can be readily adjusted to any desired angle by loosening the nut.

The plates A A, having each the half-shank B, the toothed collar C, the toothed sleeve D, having the handle socket F and the nut E.

WRENCH.

To Edward Wiard, Louisville, Ky.—The handles are held together by a sliding loop, capable of use when different sized nuts are to be turned. A slot and projection prevent lateral play at the extremity of the handles.



In a wrench with its sections A B and C D constructed and operating as described, the combination of the lug *f*, oblong slot *e*, shoulder *d*, stem *d'*, loop *g*, and sliding ring E.

Dr. Strousberg.

There are some who will regard the fall of this Continental railway king with the feelings of Alexander, when he saw Darius, great and good, fallen from his high estate. There are others who will regard the "Wunderdoctor" as an unprincipled squanderer of the money of confiding lenders. The importance of his industrial enterprise, his success, the heavy results which, in Prague, Bohemia, Hungary, will follow his fall, the sudden arrest and total extinction of a career of unparalleled splendor, will give an interest in the following biographical details, extracted from the Vienna *New Free Press*:

Bethel Henry Strousberg, arrested in St. Petersburg on the 25th of last month, on a charge of fraud, had been in declining credit since the war time of 1870; and a financial catastrophe on the Berlin exchange was then only averted by the efforts of the influential connections he had managed to form; these were of the very highest class. Not envy, merely, of the successful man who was reported to have begun life as one Baruch Hirsch Strousberg, of Neidenberg, Prussia, hastened his decline, but the uncertainty of all his previous life. No one knew what to go upon in making any estimate of him. Baruch Hirsch had become transformed into Bartel Heinrich, and this Anglicised into Bethel Henry. What could be gathered about him was only what he permitted writers to publish in his own interest, the biography by Ernst Corti being known to be issued under his sanction. So far as any true story can be gathered, we believe it to be much as follows: In 1835, when about 12 years of age, and an orphan, he came to London from Pillau in a ship freighted with oil cake. In London he took service under his uncles, who were exporters, and who had him baptised according to the rites of the English Church, in St. Dunstan's, Fleet street. Studious and industrious, he made various acquisitions in several branches of knowledge, and joined the press as a reporter; he is believed to have reported in the House of Commons. In 1848 he went to America, where he taught languages, and made money by buying and selling goods damaged by sea voyage. In 1850 he came back to London, got somehow or other a doctor's diploma, and from 1852 to 1855 edited a commercial paper, and next after that *Sharp's London Magazine*, the principal feature of which was romantic tales. In 1856 he transferred himself to Berlin, and published a penny *Illustrated Omnibus*, which stopped at its 13th number. He now took up an insurance business, and for seven years represented the London "Waterloo" office. At that time Strousberg and his family lived in lodgings in the Louiserstrasse; he had no home till some time afterward. As half an Englishman he got acquainted with members of the English Embassy; through them he became connected with English capitalists, and by their aid undertook the construction of the Tilsit-Insterburg Railway. He began now to get contracts, and in the behalf of his creditors undertook the West Prussian South Railway. Now he began to take contracts on his own account, and in eight years he had constructed or had in hand, the Tilsit-Insterburg, the Ostpreussische Sudbahn, the Berlin-Gorlitz, the Rechte-Oder-Ufer, the Markisch Posen, the Halle-Sorau Guben, the Hannover-Altenbecken, the Hungarian Nordost-Bahn, with four lines, the Roumanian railways and the Russian line Grajewo-Bialystock.

This was in 1870. The railway king had over £60,000,000 sterling afloat in his undertakings, and hundreds of thousands of hands were kept employed by them. Strousberg, however, was more than a projector and constructor of railways. He called into being a great number of industrial enterprises—the building of houses, the planting of estates, the planning of farms, railway rolling mills in Dortmund, plate mills and mining in Neustadt, an enormous machine factory in Hanover, for which 2000 workmen had to be housed, ironstone mines at Altwasser, the southern citadel of Antwerp, on the side of which rose a new quarter of the city—Port Strousberg. He built in Berlin the great cattle market, the market hall and a great number of houses, together with his own palace in the Wilhelmstrasse. Finally, he became the possessor of ten large estates in East and West Prussia, in Posen and Bradenburg, and a territorial domain in Russian Poland. His favorite residence was at Zbirow, a domain purchased for £900,000. His palace in the Wilhelmstrasse was fabulously luxurious.

By his wife, *nee* Mary Ann Swann, who has shared his diversied fortunes for more than a quarter of a century, Strousberg has seven children. His eldest son was traveling with his tutor at the time of his father's arrest.

The Water Supply of the Largest City in the World.

As most of our readers are aware, the city of London is supplied with water as the city of New York is supplied with gas—by private companies. The following article, which we take from the London *Engineering*, will show the nature of the tribulations experienced by the consumers of water and the primitive character of the appliances for supplying the city. Without egotism, we may claim to do these things better in this country.

The Metropolitan Board of Works initiated at their meeting recently an important step toward a very great advance in the sanitary condition of London. A report was brought up from the Works and General Purposes Committee. This committee reported on the resolution of the board passed on the 8th ultimo, which advised on the introduction of a bill, during the next session, for amending the Acts relating to the supply of water to the metropolis. In stating the result of their deliberations, the committee observed that the charges for water at present made are regulated by the "annual value of house property, and, consequently, such charges are the subject of constant fluctuations, according as the nominal or real value of such property is increased or diminished. On the other hand, the actual consumption of water has no co-relation with such fluctuations.

In regard to the term "annual value," the committee considered it as open to much question, as it does not appear that it has ever been judicially decided whether such means "gross or "net" value. It appears, therefore, desirable that the whole subject should be submitted to the consideration of Parliament, especially as there is reason to believe that the valuation lists, which will come into operation next April in the metropolis, will show a very great increase in the value of house property; consequently, should the existing basis of the water rate be retained, the cost of water per house would be greatly increased without any corresponding increase of consumption.

In respect of the amount of consumption per house, the committee considered it desirable that the consumers should have the option of being supplied by meter, the charge being regulated by law in a manner similarly followed at the present time with respect to gas. In conclusion, they reported that a bill should be introduced into Parliament "to alter the terms on which water is supplied to the metropolis, the existing basis of actual value having been found to be uncertain in terms, and unequal in results, and the water companies claiming to charge a higher rate when there has been no increase of consumption; also to provide for the right of the consumer to be supplied by meter, and generally to make such amendments as the circumstances of the metropolis may require; and further, that the solicitor be instructed to retain such legal and scientific assistance as may be requisite in connection with the bill."

We have given the text of this recommendation verbatim, or nearly so, for reasons that will subsequently appear obvious. Mr. Richardson moved the adoption of the report, entering into a general explanation of the reasons which had induced the committee to arrive at their conclusions. The most important part of his speech was that in which he stated that great difficulties existed in getting the water companies to adopt the meter system. The present system was that a householder might have a meter, provided he agreed to pay a minimum of £5 annually, but of course such would be entirely useless as regards the majority of consumers in the metropolis. He added that, while the object of the committee was to serve the consumers, they were not purposing to interfere with the interests of the companies, the intention being to secure justice to all parties. After remarks to a similar tendency, on the part of several members, the report was agreed to with only one dissentient, and it was consequently remitted to the Parliamentary committee.

The Metropolitan Board is thus committed to decisive action during the coming session in respect to the regulation of the gas and water companies of the metropolis. In each case they have to secure improvements in the quantity, quality, and price of these two necessaries of London life, and to a very large extent the principles of legislation are analogous in detail for both matters. In regard to the quantity of water, it does not seem probable that any increase can be reasonably expected or in fact required. But in regard to quality some improvement should be asked for. It is true that with the few exceptions of Glasgow, Manchester, Leeds, &c., places that are situated in localities where the best possible supply of water in quantity and quality can be obtained, the metropolis is eminently in an advantageous position. But still it must be borne in mind that about half its supply is drawn from the Thames. The water thus obtained is necessarily polluted with sewage, and by other causes. It may be a question how far mutual action on the part of the Metropolitan Board and the Thames Conservancy might result in improving the supply of South London.

Another and important question that will have to be discussed is that of the intermittent and constant supply system, and on this will depend the question of price. In London the waste of water through the all but general intermittent system is now enormous, and this waste the rate payer has to pay for to recoup the companies for the expense of pumping, &c. Leakage by defective fittings is another cause of the present high water rates, consequently the consumer, who has good fittings free from leakage, has to pay for the gross neglect of his neighbors. The experiments carried on by Mr. Deacon, at Liverpool, have shown that by proper precaution two-thirds of the water supplied on the intermittent system may be saved by adopting the constant, and this without in any way affecting the sanitary condition of the district.

Another highly important question that will have to be discussed is the supply of water for the extinction of fires, which at present is seriously defective. Within a radius of a mile or so of St. Paul's Churchyard the present means of extinguishing a large fire is very limited, and if one of a serious character were to break out between Aldgate and Charing Cross, among the densely built congeries of courts and alleys, into which no fire engine could enter, there is a great probability that the fires at Chicago and Boston would be eclipsed in magnitude and loss of property, if not in the extent of area. It is highly important, therefore, that in dealing in future with the supply of water, the exigencies of the fire element should be well provided for.

Another question that seems to have almost entirely escaped notice is the power which the companies possess to cut of the supply if the water rate be not paid in due time by the tenant. So far as we are aware the East London Water Works Company have been most prominent to exercise this power, the consequences of which, especially in the summer time, may not only become serious but even extensively fatal. Now that the water closet system is universal in London, an abundant supply of water is essential to every household, for if the drains be not constantly flushed, the refuse will not only accumulate in them, but also fill the sewers or impede the regular flow of sewage through them. We hope that the board will not fail to pay very careful attention to this point.

In respect to the general sanitary aspects of the question, it has long been shown that very extensive storing and filtering beds tend to purify water that had previously been contaminated by sewage, as for example, water obtained from the Thames. This result is due to the gradual action of atmospheric oxygen on the suspended and dissolved organic matter. Hence, although the metropolis cannot, at present, be supplied by water in the way that Glasgow is favored by its local position, science shows how such an advantage may be approximated to, and thus many of the sanitary evils of the metropolitan supply may be obviated. But while the water being supplied may be thus purified, it will be necessary that the board should have the power to control all butts, cisterns or other receptacles in use in houses by inspection, renewal or removal, for at present these abominations are fruitful sources of danger.

We have thus glanced at some of the most important points involved in the future of the London water supply in the hope of exciting attention thereto. As there is plenty of time before the next session of Parliament, we trust that the board will not be content with presenting a palliative, but rather seek a curative Act in their proposed measures.

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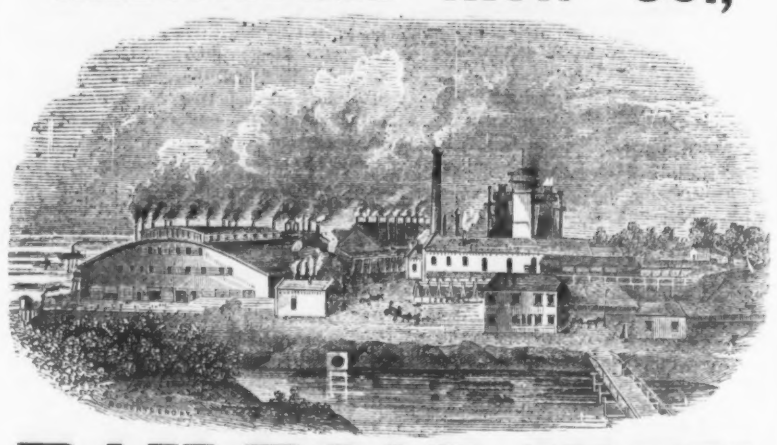

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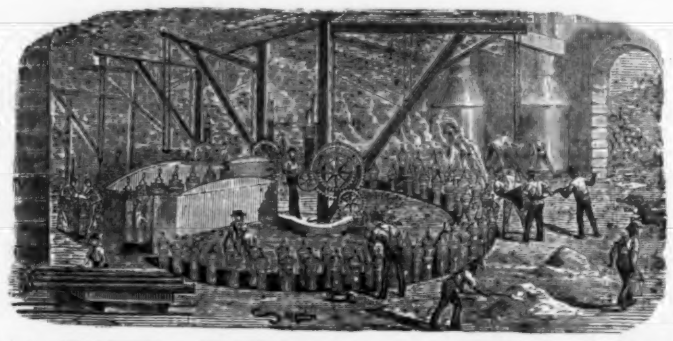

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On the Uses of Steel.

BY J. BARBA, NAVAL CONSTRUCTOR, LORIENT.

NO. VII.

Profiled plates and bars are often subjected to hammering of greater or less intensity, either to dress the plates, or to bring them to a desired form. The shock of the hammer producing a pressure at the point struck, we may conceive that the action should cause effects similar to those of the shears and the punch, but the effect thus produced should be of less importance, since the pressure exerted is generally insufficient to exceed the limit of resistance to rupture.

In order to ascertain the effect produced by hammering, test bars were cut from Creusot angle irons, and submitted cold to a violent hammering over their surface; under this operation the extension of the metal was about 7·5 per cent., the balls were then reduced to a uniform section, and placed in the testing machine. With six bars 2·36 in. wide, that had been thus treated, a mean resistance to rupture was obtained of 34·1 tons with an extension of 9·7 per cent. Thus the hammering had strikingly increased the resistance to rupture, as the mean resistance to rupture of the Creusot angle iron is 28·97. As to the power of extension, a large proportion—7·5 per cent.—had been removed by the hammering. The test bars showing at rupture a total elongation of 9·7 per cent., we have a total of 17·2 per cent., instead of 24·5. The elasticity of the metal was thus greatly modified by hammering. Lastly, it may be mentioned that these bars were much more difficult to file after than before hammering, thus showing that the hardness had been increased. Here then we have all the phenomena of tempering. The hammering, as may be supposed, acts in the same manner as punching, only with less intensity. Under the influence of pressure, to which the portions struck are subjected, the combination of carbon is more or less solved at all their points.

This experiment with hammered bars was repeated with C^{10}, C^{11} plates from Creusot, but test pieces only ·787 in. wide could be obtained. With the first a resistance of 31·7 tons and an extension of 6 per cent. was registered, with the second 28·9 tons and 10 per cent. extension. From these scanty tests it would appear probable that, in spite of their low carburation, these plates are affected by hammering in the same manner as those employed at Lorient.

If the steel test bars could be tempered to a degree sufficient to solve all the carbon which they contain, they might be subjected to a regular and general hammering without any sensible variation in their tenacity being indicated. They would lose only a part of their extensibility at rupture, corresponding to the portion absorbed under the blows of the hammer. As another consequence of the ideas exposed above, bars hammered as before, and annealed, ought to recover by this single fact their tenacity and original elasticity. Bars treated in these conditions, that is to say, hammered over their whole surface, then heated to cherry red, and cooled slowly, have shown an effective mean resistance of 29·9 tons, and an extension of 23 per cent. They were thus restored completely to their original condition. In the preceding experiments the test bars were hammered as regularly as possible over their whole surface, so that a metal practically homogeneous and equally tempered was produced. In practice, plates and profiled bars are only subjected to hammering over certain portions of their surface. After this local hammering, the iron should present indications of faults in homogeneity analogous to those observed after punching, that is to say, an apparent reduction in tenacity. This experiment is a difficult one to make on test bars, because this diminution in tenacity ought to be considerable to be perceptible at rupture; the metal supplied by the two manufacturers already named, although of a remarkable homogeneity, shows at various points differences in resistance, of the same kind as those produced by hammering.

The same experiment was reproduced, but to decrease the importance of the altered portion, a hole of ·59 in. diameter was drilled in the center of the compressed metal. A test bar was thus obtained in a condition analogous to that of bars with punched holes, only the steel was less affected at the edge of the hole than in the latter case, because the pressure that had been exerted was less than that necessary to produce rupture. These bars, broken by traction, showed a reduction in their power of resistance of about 1·9 tons.

Another similar experiment was made to show the injurious influence of caulking when too short rivets are employed. Bars 2·36 in. wide with a drilled hole of ·708 in. in diameter, were fitted with a rivet which was violently hammered, so as to leave the impression of the tool in the metal. The rivet having been removed the bar was broken in the testing machine, when it showed a reduction in strength of about 2 tons. This pressure may be compared to that resulting from the shock of the hammer; and from it we may learn what passes in a plate struck at any point. There is first a crushing of the metal and compression in all directions through the reaction of the surrounding parts. In the second place a temper will be created by the blow. When such a plate is tested for tensile strength, a marked extension will show itself in the unaffected part before any such effect is produced at the portion struck by the hammer—first, because this latter had already been partially extended, and was, at the commencement of the experiment, compressed by the outer fibers, since, being tempered, it could carry a heavy strain before reaching its elastic limit. But the portion unaffected extending more quickly, the other part has to resist a more considerable load than it would have to sustain as a homogeneous bar, and rupture would take place at this point under a load considerably less than that could have sustained.

When the hammering is not severe a very slight tempering on the surface is produced, and the same result is obtained by hammering over a large surface. When a steel plate or angle iron has to be subjected to this process, it is advisable to spread the shock over as large an area as possible. Plates and angle irons that have been hammered, and afterward annealed, cease to show any of the effects just described; the temperature to which they are raised restores the lost elasticity, and the slow cooling allows the dissolved carbon to separate regularly in such a way as to form a homogeneous metal. The absence of homogeneity resulting from hammering will also sometimes produce more rapid wear in the plates on account of the galvanic currents which are developed.

Independently of the operations already described, steel plates to be brought to their definite form have to be subjected to various processes of dressing or rolling, and of molding, either in a hot or cold state. The former of these may be conducted under the hammer, or in a rolling mill. In the former case the metal is subjected to all the pernicious effects of hammering already described, and this ought to be avoided as far as possible, unless followed by annealing. In the latter case a rolling mill with three rolls is used. In the first pass through this machine the metal is bent into a uniform curve, which the second pass in the opposite direction removes. By repeating this process a sufficient number of times all irregularities on the surface of the plate disappear. By this means the plate is subjected to a minimum and regular deformation, and to a general pressure, which maintains the fibers in the same condition and sets up no injurious action of local tempering. With this machine also a curve can be given to the plates in the direction of their width. This process has been employed almost exclusively for the steel plates employed at Lorient, and examination proves them to be as mild in quality after the operation as before.

Plates which cannot be brought to the desired form in this machine, should be gradually bent by a uniform pressure extending over a certain distance at each operation. If this be done with care the metal remains almost unaffected, and only a portion of the elasticity will have been absorbed. In most of such cases annealing is unnecessary. If it be impossible to form the plates without hammering, without local pressures of great intensity, or if the change of form is very considerable, it is necessary to proceed systematically and with care to avoid fracture during the work. The hammering ought to be confined to light blows over the largest possible surface, so that the change of form will be very gradually effected. Lastly, when the plate is finished, it should be annealed immediately, because plates in a condition of unstable equilibrium are especially exposed to rupture from outside influences, and the more so the longer they remain in this state.

Heating steel plates requires special care, and it has been long admitted that they must not be treated like iron plates. Let us consider what passes within a plate heated over a larger or smaller area in a forge fire. Whilst the fibres of the outer part which remain unaffected by the fire preserve their normal conditions and dimensions, the portion raised to a high temperature expands and compresses all the metal around it. This compression produces a local tempering and a permanent deformation around the parts heated. When the plate is drawn from the fire, the fibres previously compressed and tempered, are subjected to a gradual tensile strain producing an alteration in the elasticity in a direction the reverse of the preceding, and more intense as cooling goes on; but the effect of the tempering resulting from the original pressure will not be lessened by this tensile strain. The heated portion, on the contrary, is only subjected to compression when it is in the fire. In cooling, it is subjected only to an effort of extension arising from the resistance that the exterior deformed fibres oppose to contraction. A plate originally homogeneous will, therefore, be found, after having been in the fire, in a condition quite different to its original state. If, then, its form be changed to a very slight degree, the different fibres work in harmony no longer, some of them exceed the limit of resistance, and the plate yields under a slight strain. These fractures arise sometimes from causes absolutely insignificant—the blow of a hammer, the stroke of a chisel, the reduction of temperature through a few degrees, &c.

It should, moreover, be remarked that fractures most frequently take place, not in the part of the plate exposed to the greatest heat, but in an adjacent portion, that has been tempered, and which has to sustain, in this condition, during cooling, a permanent extension. Experience clearly proves this.

Local heats ought, then, to be avoided as much as possible; if, however, the definite form has been given to the plate by this means, and without accident, it should be immediately annealed, care being taken to bring up the heat gradually, since any sudden increase of temperature, at a point where the molecular tensions are already exaggerated, would induce rupture.

When the plate has been carefully worked, these irregularities are trifling, and it may be safely placed at once in a furnace at cherry-red heat. Rupture could only take place if the plate was in a state of very unstable equilibrium when placed in the furnace; it is under these conditions that annealing has been carried out at Lorient. After the plate has been heated uniformly to a sufficient temperature, it may be allowed to cool slowly, and the injurious effects of local heating will be entirely destroyed; homogeneity will be re-established.

When it is necessary to heat a steel plate at any point, it should be done—in order to diminish the danger of fracture—in a charcoal fire, charcoal brought to an intense heat being laid upon the part which is to be most highly heated, the heat being gradually reduced on all sides of this point; by this means a gradation of temperature is secured from the lowest to the highest points. Equally all local cooling should be avoided, which will produce, like local heating, injurious effects, though not so intense.

If raised to a sufficient heat, steel plates may be hammered without inconvenience, but when a plate is hammered from the moment it is at red heat, until it is cold, the effects are at least as injurious as those resulting from cold hammering. The blows of the hammer on a hot plate maintain the solution of the carbon produced by the temperature, whilst cold hammering only solves the mixed carbon. It will be seen, therefore, that in the case of hammering prolonged from the moment when the plate is at red heat until it is cold, the final solution is greater than in the case of cold hammering.

In hammering hot steel plates the operation ought, therefore, to be stopped whilst the temperature is still so high that the carbon may separate itself on cooling. With this precaution no dangerous consequences will follow.

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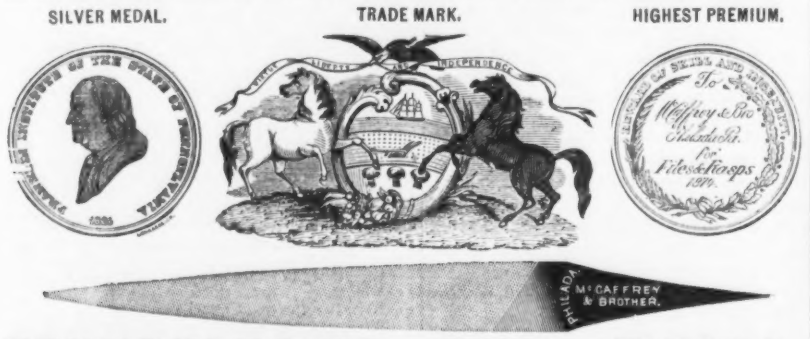

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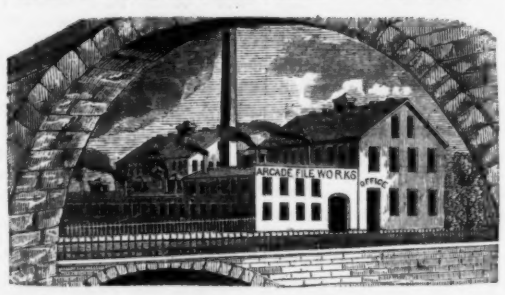

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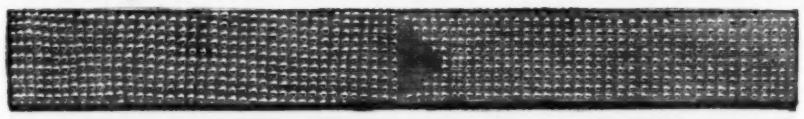

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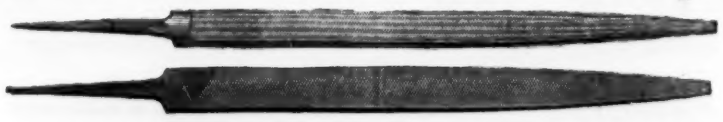

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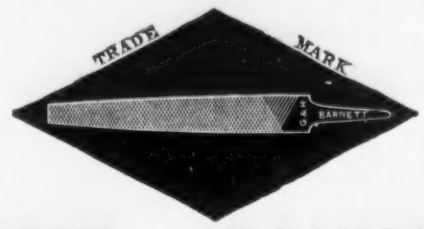

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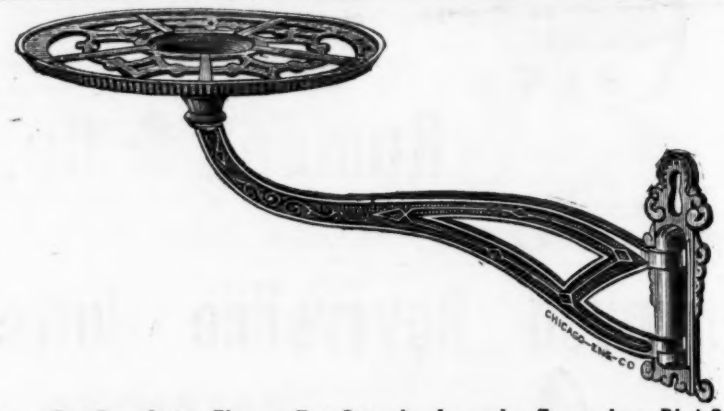

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New Mechanical Miracles.

The Keely motor hoax is prolific. Mr. A. Arnold, of Tenafly, N. J., some time ago assured the public that he had invented a machine years ago which would do all that was claimed for the Keely motor, and now we hear from a Chicago mechanic, Nicholas Thomas by name, and by occupation foreman of the Chicago & Northwestern Railroad shops, who wants to bet Mr. Keely $5000 that he can produce a machine which will do more than the Keely motor, getting its power from the same sources, &c. The following very interesting and amusing description of Mr. Thomas' invention, and his correspondence with Mr. Keely, is given in the Chicago *Tribune*:

Our Chicago man got the idea, somehow or other, and it seems pretty correctly, too, that he could improve on the Keely motor; that he could soon have a machine in operation which would not only accomplish what Keely hopes to accomplish, but do things that Keely never dreamed of. All he knows of the Keely motor is what he has learned from the papers and from conversations with interested parties, and the amount thus gained is not large. Where a man keeps an invention as much in the dark as Keely does, admitting only a chosen few to his seances, and then allowing them to see only a very small portion of the wonders the machine is to accomplish, it is not strange that so little real knowledge regarding the motor has been made known. At the time Mr. Thomas first read of the Keely discovery, he therefore knew very little about it. The papers guessed at the principles involved. He reasoned it out. With the idea that he could do better he set to work. Occupying his position in the railroad shops, he was necessarily obliged to work out his idea when off duty, at his home in the evening, and at the foundry of John Featherstone, on Front street, near North Halsted. This gentleman seems to have become interested in the matter very soon after it was started, and allowed the inventor the use of his office, where he has made several of his experiments, and where he now has the apparatus. Subsequently Mr. Thomas has been assisted by the substantial backing of such men as S. F. Gale and David A. Gage. Starting out with the general idea of generating power by the use of water, Mr. Thomas, after discovering that this could be done, employed the power so generated to run a little toy engine which could probably be bought at any toy store for less than a dollar. He found that the force generated would drive this with the greatest ease, and he next tried the plan with an engine somewhat larger, but still quite a trifling affair. Not having any great means at his command, he next accepted the offer of an engine from Mr. Featherstone, which had been made by one of the molders in that gentleman's employ, and used by him to run a sewing machine. This engine is the one now in use in connection with the main apparatus at the office of the Columbia Iron Foundry, and is a simple beam engine, not constructed with as much care as an engineer, like Mr. Thomas himself, would have displayed. It was discovered that the engine under the power of this wonderful motor was a mere plaything. Then a pressure of over 17,000 pounds to the square inch was obtained, and again a pressure of over 20,000 pounds.

THOMAS TO KEELY.

Very naturally Mr. Thomas thought he had gotten hold of a big thing, and with this idea he one day sat down and penned the following letter:

CHICAGO AVENUE SHOPS,
CHICAGO AND NORTHWESTERN RAILWAY,
CHICAGO, June 28, 1875.

MR. KEELY—Dear Sir: Having seen considerable space in the papers devoted to your machine, I take this means of letting you know that I have a machine which will do all yours has done, as certified to at the test trials published, and I now challenge you to put one of yours in competition with mine, both generators being the same size, the test being the pressure generated in a specified time, and the time an engine is run by said machine; the engines to be the same size and description. I will put up $5000, you to put up the like amount, and the test to be a public one. If you wish to accept this challenge, please answer at once. I would have published this challenge in the papers, but thought it would be best to hear from you first. If I do not, I shall publish publicly, and sell the secret to the highest bidder. NICHOLAS THOMAS.

Before a reply came it seems that a Mr. Bell, the expert connected with the Keely motor, came to Chicago and saw the Thomas invention. He probably reported at Philadelphia shortly after, and Mr. Thomas then received

THE FOLLOWING REPLY:

Office of CHARLES B. COLLIER, ATTORNEY AND COUNSELLOR AT LAW (IN PATENT CAUSES), No. 702 CHESTNUT STREET, PHILADELPHIA, July 15th, 1875.

Mr. Nicholas Thomas, Chicago, Ill.

DEAR SIR: As the counsel for Mr. Keely, I am requested by him to write you expressing to you his sincere thanks for the kindly treatment and courtesies extended to Mr. Bell during his recent visit to your city. The apparatus exhibited by you to Mr. Bell, I am also requested to say, is substantially similar to an apparatus constructed by Mr. Keely long since, but is entirely unlike in principle, operation and effect, his generator or multiplicator, known as the Keely Motor. I am further desired to say that within a short time, say a few months, Mr. Keely will be in a condition, with a new apparatus now rapidly approaching completion, to exhibit to you the operations of his machine, which, no doubt, will be of great interest to a mechanic of your ability. At such time you will be duly notified, and Mr. Keely will then take great pleasure in reciprocating the courtesies so kindly extended by you to Mr. Bell, and I may add that probably some proposition may be submitted to you by which you may become interested in his invention, for the State in which you reside, and which will be to your pecuniary advantage. The pressing engagements of Mr. Keely prevent him from addressing you in person. Very respectfully yours,

CHARLES B. COLLIER, for J. W. KEELY.

The challenge has never been accepted. Some of the Keely men were here the other day, and it is supposed that the proposition was then made which is referred to by Mr. Collier, by which Thomas was to become interested in Keely's invention for the State of Illinois, and which would be to his pecuniary advantage. Whether any such proposition was made or not, it is certain that no arrangements could be made which would prove satisfactory to all parties. The Keely men returned, having abandoned the idea of keeping the Chicago man still, while the latter is busily engaged in making a perfect model to send to Washington, where application will be made for a patent. The challenge is still open, but the Keely folks do not seem very anxious to accept.

Yesterday afternoon the inventor gave an exhibition of what his invention can do at Featherstone's foundry, in the presence of several gentlemen interested in mechanics. The inventor came in about 3 o'clock, and, when asked to proceed, did so by simply turning a cock which allowed water from the hydrant to enter the mysterious generator, where, in some equally mysterious manner, it was transformed into its enormous force. In forty-six seconds a pressure of 7150 pounds to the square inch was obtained, and shortly afterward this pressure was increased to 17,000 pounds. The engine was put in motion by admitting the gas generated, or the motive power, or whatever it may be called, through a very small tube into the piston, when the wheels began to revolve. By admitting a greater or smaller quantity the speed was either increased or retarded.

The inventor stood near and answered the questions asked and the criticisms offered by the spectators. Of course he did not explain everything, as that would be to divulge the great secret of the invention. But from what he said the following general description was obtained, and, if the reader has the curiosity, as many doubtless will have, to follow the matter out, he can see the machine itself at almost any time:

The apparatus consists of two parts—a generator and an engine. The latter is of ordinary construction, and is not a part of the invention. It will, therefore, be necessary to speak only of the generator, which the inventor keeps pretty well boxed up where it is secure from the too-prying eyes of the curiosity hunter. There are two cylinders, each about twelve inches in diameter, and about twelve inches deep. Inside of these cylinders are the pipes, which are connected by another pipe to a reservoir much stronger than the generators. The water pipe, with a pressure of about 10 pounds to the square inch, is connected with the generator. When the water is admitted, it produces the force, which passes through the reservoir, and thence through a pipe with an area of about 1-16 of an inch to the engine, whose cylinder is 3¼ inches stroke by three inches in diameter, and which makes about 150 revolutions per minute. A lever, five feet long, is attached to the generator and loaded down at one end with a piece of iron weighing 201 pounds. The contrivance acts as a sort of safety-valve. When the engine is not running, and the force generated is, therefore, not being exhausted, but kept in reserve, an additional weight of 220 pounds can be attached to the weight without deflecting the lever. Yesterday afternoon Mr. Thomas suspended himself to the weight with his hands, and his own weight, 150 pounds, together with that of the iron itself, was not sufficient to pull the bar down. Mr. Gage, weighing nearly 200 pounds, tried it with the same result, and a day or two ago Mr. Sanborn, master mechanic of the Chicago and Northwestern Railroad, who weighs 220 pounds, was unable to pull it down.

Mr. Thomas is so well satisfied that he is determined to go further, and is confident that, before many weeks have elapsed, he will have a machine which will convince even the most sceptical of its entire practicability.

Even with the present apparatus, small and imperfect as a first experiment must be, he says he can drive an engine 75 times as large as the one now being used. He thinks he has accomplished what Keely has, and more too, but with different apparatus. One great difference between his motor and Keely's lies in the fact that the former claims he can run his engine continuously. He has left the office when the engine was running, and on his return hours afterward it had not stopped. He says he does'nt really know how much power he has, but he knows how much pressure can be exerted to the square inch with the present apparatus. In reply to a question as to whether any chemicals or electricity were used, Mr. Thomas said they were not, and that nothing was used but air and water. The weight is simply used to show the pressure. Gauges were used at first, but so great was the pressure that they burst, and he now has to employ the weight.

Mr. Thomas proposes to utilize his novel power to run railway trains, steam and fire-engines, and generally to supersede steam where the latter is employed for mechanical purposes.

A responsible firm have offered to build a bridge across the Schuylkill River, at Market street, Philadelphia, under somewhat unusual conditions. The permanent bridge was destroyed by fire on the afternoon of Saturday, the 20th ult. The offer in question is to build a new bridge in 20 days for $24,000, and to allow a rebate of $5000 in case the materials are returned within six months.

PHILADELPHIA CORRESPONDENCE.

PHILADELPHIA, Nov. 29, 1875.

Business has been much interrupted this week by the Thanksgiving holiday and the funeral obsequies of Vice-President Wilson. The former was generally observed as a close holiday, and the latter were extremely imposing, and attracted an immense concourse of people to the exclusion of business during the hours of the solemnities.

During the week your correspondent has had an opportunity to visit and examine the works of Chas. M. Wheatley, Esq., known as the Schuylkill Copper Works, at Phœnixville, Pa., one of the very few prosperous metallurgical operations in these dull times. As there is much to interest your readers at these works, I notice the peculiar features. The Schuylkill Copper Works is situated on the line of the Reading Railroad, at Phœnixville, 28 miles from Philadelphia, and connected directly with the railroad which runs in front of it by a siding. The plant consists of three furnaces, connected with one stack, and combines all the appliances necessary for the smelting of copper ore, reduction to a matte and refining the matte and the melting and running of the refined metal into ingot copper. The process used is that in vogue as the old Swansea process, and preferred on account of its ability to treat all copper ores, no matter what their gangue may be. Fire tries all things, and the old fire process is believed to be the most reliable and inexpensive method, although some of the later processes, of which more anon, are very successful in working certain ores. The furnaces here are about the size of ordinary heating furnaces in a rolling mill, the entire building, which is of brick, being about 60 by 40 feet. The two furnaces at either end are used for smelting ore and refining the matte, while the third, or center furnace, which is located directly under the stack, is used for refining the metallic copper and running into ingots. The product of the works is something over 12,000 lbs. of ingot copper weekly. The amount smelted in November, to and inclusive of the 24th inst., being 48,000, with another run of 12,000 lbs. to make in the month. The process of casting the ingots has none of the exciting adjuncts of the Bessemer "blow" or "teeming" crucible steel, but, nevertheless, has much of interest and wonderful beauty in the curious tints of the molten copper. The molds, which are of cast iron and of the usual size for ingots of copper, are placed in double rows over a shallow tank of water, and each pair of molds is hung on pivots, precisely like a *waffle iron*, to use an illustration familiar to the hardware trade. The melted copper, when ready for pouring, is dipped from the bed of the furnace in ladles holding possibly 50 lbs. each, and poured by hand into each mold. No especial pains is taken to fill each mold continuously, the remains of one ladle in a mold being supplemented by the contents of another, and no seam or division being visible in the ingot. As quickly as the metal sets, which is almost instantaneously, the molds are inverted and the ingot falls into the tank of water. This is done to prevent oxidation by the atmosphere while hot, under which the ingot would blacken on the surface. The molds are turned over, dried by inserting a sponge on the end of a rod and again filled, the process being almost continuous. The ingots are taken from the tank by hooks, barreled at once, and loaded into cars almost before they are cool. The best part of the process is that the product is *net cash*, and may be realized on before it reaches the merchant's store, in fact. The Schuylkill Copper Works receive ore from all sources, and, while I was present, received a lot from Texas of wonderful richness. This ore is found by the Indian traders some 200 miles from rail, and is principally surface ore. It is wagoned this great distance to Dennison, and shipped thence *via* Hannibal (Mo.) to Phœnixville. The rail freight alone amounts to $38 per ton, but we are dealing with *copper*, not *iron ores*, and one may disregard $40 or $50 charges when the ore nets the seller over $300 per ton. This ore is in boulders about the size of a cocoanut, which, when broken, are almost pure carbonates of copper, and with them are found splendid specimens of malachite. No less than 70 per cent. metallic copper is the yield of this ore, and as copper ores sell for from $3·75 to $4·25 per unit of copper contained, the profit is apparent, even with this long road to mill. Missouri ores averaging 30 to 35 per cent. copper are also largely handled here, with quantities from nearer home. Several methods are in vogue here for buying ores, one of which, and the fairest to the seller, is to charge a given sum per lb. of copper in the ore for reduction, and to give the net price in cash of the copper produced, whatever the quotation may be at time of sale. A short distance below the Schuylkill Copper Works is that of the Chemical Copper Company, where the interesting chemical process of T. Sterry Hunt is in use, and by which ores containing but 3 per cent. of copper can be worked at a profit. This works is also very prosperous, and engaged in adding to its plant. The proprietor of the Schuylkill Copper Works being a gentleman of culture, gave me the pleasure of examining a wonderful collection of minerals and a library, principally of works on mining and cognate subjects, which possesses some features of rare value. Among these is an old tome which laughs at Centennials, it having already seen *three of them*, and puts all our boasts of mechanical progress in the 19th century to the blush, by showing us that the Germans, over three centuries ago, mined and hoisted their ores, and pumped their mines by the same mechanical contrivances which we now use. Verily there is nothing new under the sun. This work is Agricola's *De Re Metallica*, and printed in Latin in 1575. It is profusely illustrated with wood cuts of an excellence astonishing for that period, and for execution and sharpness of line equal to many now used. We have placed the use of tramways in England at somewhere in 1700—here Agricola gives a cut of a tramway, with an ore car—coming over a trestle work and dumping the ore before a furnace, as much like the one I had just left as could be. And all this three hundred years ago. The horse whim and drum; the endless chain pump, with a series of buckets on a rope; a double bucket water wheel for hoisting or lowering, in which the water is turned off one set of buckets and on to another by gates, actuated by double levers; the slope or incline; the man engine; adits and stopes; furnaces, cupels, crucibles, molds; a power hammer; all very little behind those of the present day, are here illustrated as in actual use three hundred years ago. Steam and the Keely motor were alone wanting to induce the belief that we were looking at cuts of present workings. A translation of this work, with photoliths of the cuts, would make the fortune of *The Metal Worker*, as well as, no doubt, show us that the ancient miners and smelters could give us several wrinkles. As usual, I have run away with my space, but any one interested in one of the *live* industries of the country, will do well to visit the Schuylkill Copper Works, and see as I did the many peculiar features of the reduction of copper, the beauties of the bergl-tinted molten metal, and share the valuable information of the proprietor. But the most beautiful part of the whole is that the business meets with an unlimited cash demand without that *bete noir* of the iron trade—four months' paper.

What the Government will Show at the Centennial.

Most persons are aware that a Government Board, consisting of representatives from the various departments at Washington, including the Smithsonian Institution and the United States Fish Commission, has been organized for the purpose of making an exhibition at the Centennial Exhibition of whatever may illustrate the workings of the United States Government, its military and naval power, and its resources as derived from the animal, vegetable and mineral kingdoms. A building for the exhibition of these articles has been erected in the grounds of the Centennial Exhibition, in Philadelphia, covering over two acres in extent. The building is nearly completed, and will be ready for occupation early in December. The cost, defrayed out of the government appropriation of $505,000, will amount to about $80,000. I have before me a report of what has been done by the War Department in reference to its display, which it is expected will require 11,200 square feet, beside several outside buildings. The bureaus of the department that will contribute to the display are the Engineer, Ordnance, Medical, Quartermaster's and Signal. The Engineer Bureau will exhibit maps, charts and engravings illustrating the various labors of the engineer corps in the prosecution of the great system of river and harbor improvements. It will also show models of some of the works, illustrating engineering machinery and appliances, samples of building stones, pontoon bridges and pontoon wagon trains, siege and mining tools, and models of lighthouses. This department will be under the charge of Capt. D. P. Heap, U. S. Engineers.

The mechanical arts pertaining to the operations of the army will be illustrated by the collections of the Ordnance Bureau, and not only the present perfection of the various kinds of army material will be shown, but also the stages through which each has successively passed from the early days of the republic to the present. Among other displays will be a series of figures to show the appearance and dress of the individual soldier during the revolutionary period, the war of 1812, the Mexican war, the war of the Rebellion and at the present time. A complete set of gun-making machinery will likewise be exhibited in full action to be run by men from the National Armory. They will be selected for their mechanical skill and ability. With these will be shown all the parts of the Springfield rifle and carbine in the different stages of manufacture, each bearing a label giving its name and that of the machine doing the work. Various small arms will also be shown from the ante-revolutionary period down to the present. The apparatus for determining the initial velocity of projectiles, and the powder prepared in the bore of the gun, at the moment of discharge, will also be exhibited, and there will be a special building for actual experiments and illustrations. The only illustration of heavy ordnance will be a 20-inch Rodman gun, weighing over 100,000 pounds, to be worked at stated intervals in the grounds. Possibly some forms of breech loading and other cannon will be exhibited if deemed advisable. The series of shot, shell, case carcasses, grenades, etc., will be very complete; as also the different rifle projectiles of various patterns. Fuses, powders, etc., will likewise be exhibited. The most interesting display, however, will be the model of Rock Island Arsenal, on the scale of one two-hundredths. This will include the shops, reservoir, officers' and mens' quarters, etc., with representations of familiar objects such as a train of cars, wagons, troops in line, etc., to show the natural scale necessary to a proper estimation of the magnitude of the establishment. This section of the display of the War Department is under the charge of Lieutenant Henry Metcalfe of the Ordnance Corps.

The Medical Department will be illustrated by a post hospital of 24 beds, one wing of which will be fitted up for actual service, so that, if needed, it may be used as the hospital of the Centennial Exhibition. There will also be shown a complete series of medical supplies, as used in the army, including medicines, medical and surgical instruments, hospital stores, hospital clothing, models of barrack hospitals, railroad cars for the transportation of the sick and wounded, hospital steamboats and steamships, and a selection of full sized ambulances and medicine wagons, etc. This is to be in charge of Assistant-Surgeon J. J. Woodward. In the Quartermaster's Department will be shown the clothing for every branch of the service from an early date to the present time, all articles of garrison and camp equipage, such as musical istruments for each arm of the service, company, regimental and post books, army wagons and harness, &c. Capt. John F. Rodgers, of the Quartermaster's Department, will have charge of this display. The exhibition on the part of the Signal Bureau it is expected will be extremely interesting and instructive. In this will be shown a full telegraphic train with nine wagons, and with outfit complete; international and cautionary signals; and a full assortment of thermometers, barometers, anemometers, and all other meteorological apparatus. The entire machinery of the office will be exhibited, such as the method of making its daily weather maps, &c.

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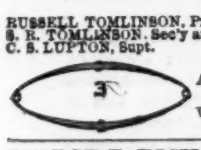

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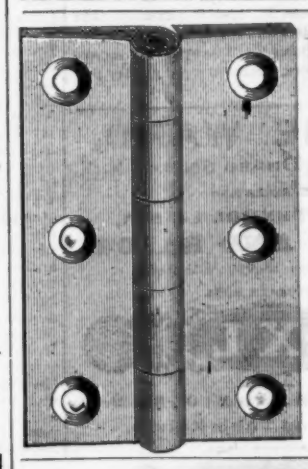

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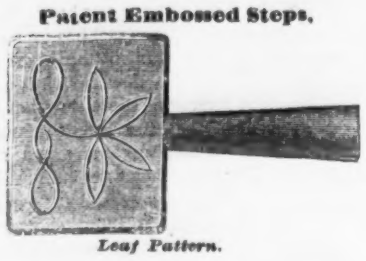
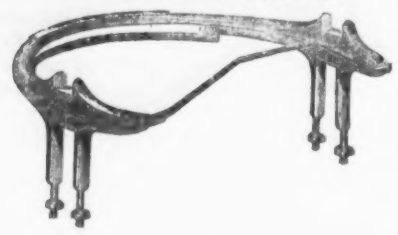


Leaf Pattern.

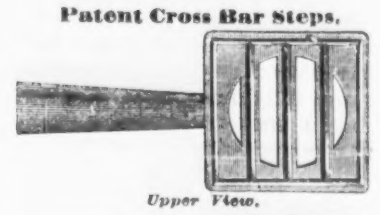
King Bolt Yokes.

No. 6 Fifth Wheels.



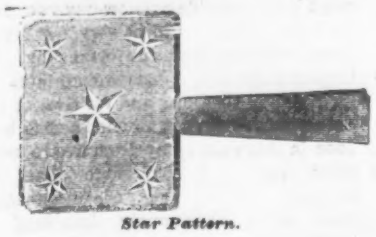
1871 Pattern Shaft Couplings.

Patent Cross Bar Steps.



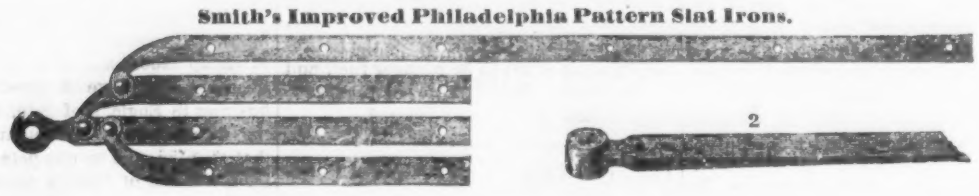
Upper View.

Lower View.

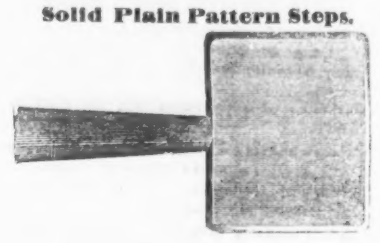


Star Pattern.

Smith's Improved Philadelphia Pattern Slat Irons.



Solid Plain Pattern Steps.



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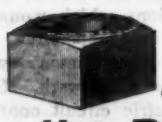

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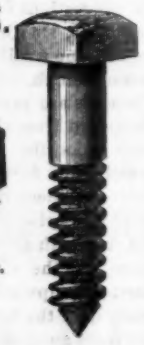

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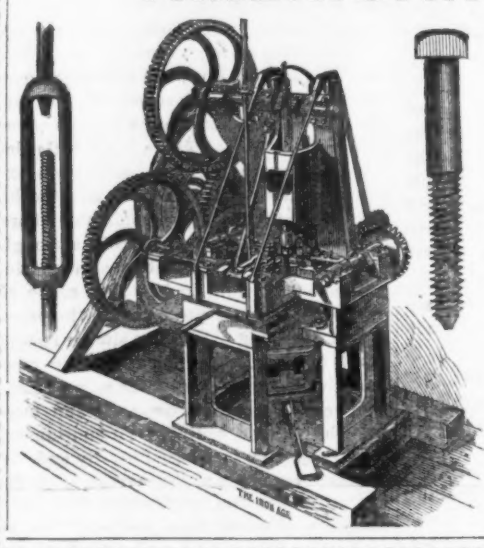

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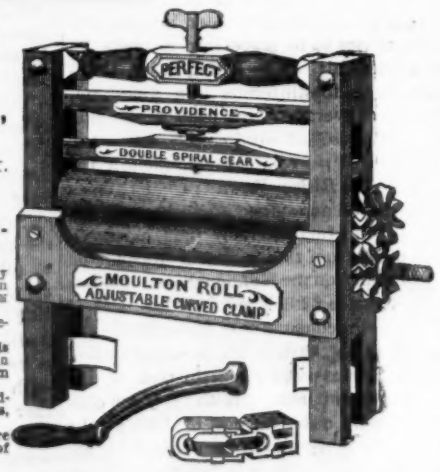

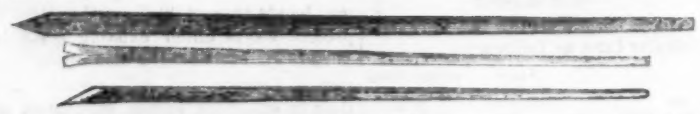

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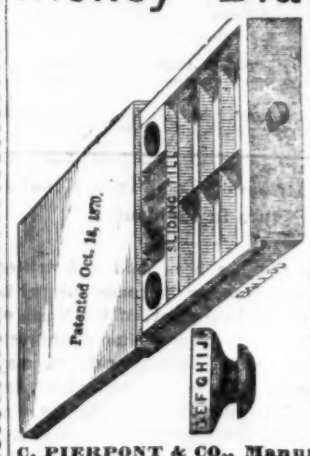

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The Iron Age.

New York, Thursday, December 2, 1875.

DAVID WILLIAMS - *Publisher and Proprietor.*
JAMES C. BAYLES - *Editor.*
JOHN S. KING - - *Business Manager.*

NEW YORK, January 2, 1875.

Until the 1st instant the postage on newspapers was paid by subscribers at the office where the paper was received, the yearly rates on the different editions of *The Iron Age* being as follows: Weekly, 40 cents; Semi-Monthly, 40 cents; Monthly, 24 cents.

Under the provisions of the new postal law, which went into effect on the 1st instant, prepayment at the office of mailing is required, at the rate of two cents per pound for the Weekly, and three cents per pound for the Semi-Monthly and Monthly, which will make the postage as follows on the different editions: Weekly, 50 cents; Semi-Monthly, 30 cents; Monthly, 15 cents.

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CONTENTS.

The Conditions of Cheap Iron Manufacture in the South.

A great deal has been said and written to prove that iron can be made cheaper in the South than in any part of the North or West. That the assertion no doubt rests upon a substantial basis of truth, we may well believe, when so high an authority as Mr. Isaac Lowthian Bell says that the conditions which are necessary to the manufacture of cheap iron—namely, contiguous ores, fuels and flux—exist to a greater and more perfect extent in the South than elsewhere, except some highly favored portions of Europe. But with all these advantages, the iron industries of the South now suffer as severely as those of any other section of the country, and the furnaces of the South have not been able to furnish the mills at Pittsburgh with cheaper iron than is supplied by furnaces in and about that city. Whatever the possibilities of iron manufacture in the South, there have undoubtedly been too many glowing pictures of what could be done, and too few well-directed and sustained efforts to realize these predictions. We do not doubt that iron is made in Tennessee cheaper than in Pennsylvania, but by the time it is delivered in Pittsburgh the added cost of transportation makes it cost more than the local product. Again, there has been a great deal of looseness in the grading of Southern irons, which has not tended to give them a good name or to enable the makers, as the rule, to command a high price for them. Evidently, therefore, the possibilities of cheap iron making in the South have not yet been realized. In the competition for rails for the Cincinnati Southern Railroad, the Roane Iron Company, of Chattanooga, was underbid by several Western mills, and we are informed that the representatives of the Roane Company stated that they could not compete with the Western mills and pay freights; also, that they have since furnished 1000 tons at $52·50, delivered in Kentucky. It was, however, of the Roane Company's furnace that the first great boast was uttered that iron could be made in them at a cost not exceeding $13 per ton. With a fair grade of pig iron at this price, or near it, it seems strange that they could not make rails for $50 at a profit, delivered in Cincinnati. But behind the question of transportation lies the fact that the coal used in the Roane Company's rolling mill costs $2 to $2·50 per ton of 2000 lbs., while the Cleveland mills get the Mahoning coal at $1 to $1·25. This is no small item, although the consumption of coal probably does not exceed two tons to the ton of finished rails. In addition, we have the fact, on the authority of Mr. Bell, that the cost of puddling at Chattanooga is 75 cents higher than in Cleveland. Here we have a difference of about $3 against the Southern mills, which can only be offset by the use of cheaper fuel.

The most complete and costly furnace in the South, and the one of which much has been expected, is the Rising Fawn, in Dade county, Georgia. It has a first-class stack, a Whitwell hot blast oven, one of Morris' best engines, and is owned by men with large capital. A so-called Belgian oven was erected when the furnace was built, but has not yet been successfully used, although put up at great cost. From a Chattanooga paper we learn that this furnace is now getting its coke from Tracy City, made of Suwanee coal, and has contracted for 3000 bushels of this fuel per day, at 10 cents per bushel. Without stopping to consider why this company do not use their own coal, we cannot but contrast their operations with those of the Lucy Furnace, at Pittsburgh. This furnace may be taken as an example of the best Western practice, as the Rising Fawn is of the best Southern. The Lucy makes 600 tons per week, and the Rising Fawn cannot be counted on for more than 280 tons. There is, consequently, a great saving in labor for the Lucy. The latter uses a local ore, calcined and guaranteed to yield 60 per cent. of iron, which costs at the furnace $6 per ton. Allowing one and three-quarter tons of this ore to the ton of pig, we may assume that the ore required for a ton of the Lucy product costs $10·50. Mr. Bell states that at the time of his visit it was $11·25, but we have later information which causes us to place our estimate 75 cents below his. The Rising Fawn Company use a fossilliferous iron limestone, which will average 40 per cent. in the furnace. The cost of mining and delivering it is about $2 per ton. Hence, the ore for a ton of the Rising Fawn product costs about $5—an advantage of $5·50 over the Lucy. For fuel the Lucy uses chiefly a coke made from the slack and waste coal of the mines on the Monongahela. It costs at the furnace $2·37½ per 2000 lbs., and if we assume a consumption of 80 bushels to the ton of pig, this, at 4¾ cents per bushel (40 lbs.), gives us $3·80 as the cost of the fuel per ton of iron. With the same consumption of coke, the cost of fuel at the Rising Fawn per ton of iron would be $8. This gives a difference in favor of the Lucy Furnace of $4·20. We give the comparison in tabular form as follows:

	Lucy Furnace.	Rising Fawn Furnace.
Cost of ore	$11·25	$5·00
Cost of 80 bushels coke	3·80	8·00
	$15·05	$13·00
Net difference in favor of Rising Fawn on cost of materials		$2·05

In addition to this, the Rising Fawn furnace has advantage over the Lucy in lower taxes, which probably counterbalances the Lucy's saving in labor upon a greater yield; but it is evident that if the Rising Fawn could get coke at 7 cents per bushel, its product would be able to bear the cost of transportation, and yet compete with the Pittsburgh irons in that and neighboring markets.

By adapting this comparison to the smaller furnaces North and South, it becomes still more strikingly in favor of the latter, but the fact remains that the small Southern furnaces cannot place iron in Pittsburgh at present prices with profit. There is probably no furnace in the South better managed than that at Chattanooga, yet the product of this stack has only the advantage of the freights from Pittsburgh down, over the irons of that city in the Cincinnati and Louisville markets; and yet the Chattanooga and Bartow furnaces have an advantage over the Rising Fawn in richer ores and at less cost per ton of pig iron.

We have gone over all this ground, not to show that the South cannot utilize her superior natural advantages in the production of cheaper iron than can be made in the West, but rather to show that it cannot realize this hope under existing conditions. The one essential of success for the Southern furnaces seems to be cheaper fuel, and in our issue of next week we shall endeavor to show how this may be secured.

The Iron Trade at Home and Abroad.

Every indication points to the fact that the English iron trade is on the verge of a crisis, which will shake this great industry to the foundations. The *Daily Telegraph*, of London, in an article on this subject, predicts a general stoppage of iron manufacturing and mining. Some of the great companies have already closed all contracts and dismissed their work people; half the mills in the North of England have stopped or given notice, and the remainder are working without profit. Not only are prices so low as to be unremunerative, but orders are so scarce that few establishments can get enough to keep them going at any price. There is so little demand for iron rails that the stagnation extends into Wales, and only the steel works are now enjoying any considerable share of the patronage of the railroads, although the steel trade is probably as much depressed as the iron trade. The cause of the depression seems to be much the same as that operating to produce similar results in this country. There is very little consumptive demand—and in the case of England very little export demand—and buyers who, under ordinary circumstances, would probably purchase liberally and, by so doing, give tone to the market, are holding off, under the impression that "the "bottom has not been reached," or at least, that they can better afford to let manufacturers carry the stocks than to buy now in anticipation of a future requirement. The fact that prices cannot decline, and, indeed, cannot long continue at their present low average, without leading to a total stoppage of production, does not seem to have weight as an argument in favor of present purchases. Until recently the makers of merchant irons have managed to keep along from month to month without serious difficulty, but they are working off their contracts, and only small orders for odd lots are coming in, making the prospects for the remainder of the winter discouraging, but not quite hopeless. Pig iron, though not held in large stocks, is tending downward, but will probably respond quickly to any improvement in the demand for manufactured irons.

From this brief review of the state of trade, as reported in our latest English advices, it will be seen that in most respects the state of affairs in the iron districts of Great Britain is much the same as in those of this country. The one exception seems to be that in this country the stock of pig iron is pretty large, and a brisk and continuous demand would be needed to so reduce the stock of mill irons as to raise the price to a point which would encourage the blowing in of any considerable number of idle furnaces. In other respects, however, we are somewhat better off than our English neighbors. With us labor is more tractable, and wages have adjusted themselves to a scale more nearly in accordance with the price of finished iron. No further reduction in the wages of laborers employed about blast furnaces could reasonably be asked by employers, and the mill hands are, we think, well content with present wages under existing conditions. We are glad to notice a disposition on the part of furnace and mill owners at this time to study the minor economies more carefully than they have hitherto deemed necessary, and the fruits of this study will be reaped for years to come in lessened cost and increased profits.

The position of the iron trade on the Continent is scarcely better than in Great Britain, save in a few localities enjoying exceptional facilities. The recent attempts to stimulate the iron trade in Germany have not been attended with success, and the same is true of Austria. Most of the works built during the past few years have suspended, and many of the companies are hopelessly bankrupt. All Germany is just now suffering from industrial and commercial depression, and grave fears are entertained that, should the protective duties which were to have expired by the end of the year, not be continued, the prospects of recovery in some important branches of manufacture will be small indeed. In France the position of the iron trade is said to be extremely precarious. The prices offered for small lots are so low that it is sometimes difficult to find establishments which will take them, while to secure large orders the bids are so low as to barely return cost. Belgium is the only country of the world which seems to be able to keep her ironworks busy, but as the whole production of Belgium is only about equal to that of North Staffordshire, it does not exercise a controlling influence upon the markets of the world. The Belgian iron masters have a marked advantage over those of England in the matter of cheap labor, and it is on account of this that they have managed to do some business in England of late, very much to the discomfort of the manufacturers of that country, and to compete successfully for a number of foreign orders offered in the British market.

The only consolation which we can draw from the fact that we have the principal iron producing countries of the world in the same position as ourselves, is the knowledge that our misfortunes are brought about largely by the operation of causes against which we could not have guarded, and for which we are not responsible. Three or four years ago there was everything to encourage the building of iron works. The demand was steadily growing, stocks were melting and prices were steadily advancing. There seemed to be no good reason why this demand should fall off, or why prices should decline until the supply should exceed the demand. Those who built new iron works or extended and increased their facilities at this time, may have acted unwisely, but it must be confessed that at the time everybody believed they were doing wisely. The fact remains, however, that the world's capacity for producing iron is considerably in excess of the present demand for that metal, and that we must wait until another wave of progress shall overtake us. For the present the iron master cannot do better than employ both his spare time and spare capital in discovering and providing the means of cheapening the cost and improving the quality of his product. The time is not far distant when he will have opportunity to make good use of what he has learned and is daily learning from the rough experiences of this year and last.

Fast Ocean Steamers.

In a recent issue of *Iron* we find a number of drawings illustrating a new design for fast vessels, by Dr. J. Collis Browne. The most prominent feature of the design is the shape of that part of the bow which deals with the waves. In ordinary vessels the stem is vertical, or slopes forward from the keel, so that the vessel is longer on deck than on the keel. At the same time the upper part of the bow is made to flare, for the purpose of throwing the waves off when they strike. In plunging through a head sea the blows are very severe, and materially increase the power required to propel the vessel. With bluff or full bow the whole vessel is lifted, as it were, by the end. It has been noticed that monitors and similar iron-clads with low ends, when in heavy seaway, encounter very little resistance, working ahead without any considerable diminution of speed. Acting on the suggestions furnished by this and similar facts, Dr. Browne has designed two yachts, one a sailing vessel and the other a steam launch, of a very peculiar model. The ends are low, and the stem inclines backward from the keel, raking aft much more than the cutwater of an ordinary vessel rakes forward. The vessel is much shorter on deck than on the keel, and, instead of flaring outward at the bow, as is the rule with all modern ships, "tumbles home," as the old expression is, growing narrower upward. A sea passes harmlessly over the bow, so that the vessel does not meet an increase of resistance from a head sea. A familiar example of such a vessel is found in Winans' well known cigar steamer. This vessel went through the waves, instead of over them, had very little motion and was very fast. Dr. Browne's vessels differ a little in trifling particulars from Winans' cigar steamer. The latter was circular in cross section, while the new boats are more nearly like a fish in shape at the bow and stern, and at midships are very like ordinary vessels. The principle is the same in both—sending the vessel's bow through a wave, instead of making her rise and go over it. Dr. Browne's steamer has its screw propeller placed at the stern, while in Winans' steamer it was midships and surrounded the vessel—a very unfortunate thing—and was probably one of the causes of abandonment or want of success in the plan. Winans' cigar steamer was reported to be very fast, and fabulous stories are told of the miles she ran per hour. Probably in a heavy sea no vessel has ever much exceeded her speed, if it has ever been equaled. While the new model is a step in the right direction, there does not seem to be any hope that the English naval architects will be able to get any great speed out of it. For years they have built safe and moderately fast steamers, but they have not been successful in building very fast boats of any kind except steam launches. Their ocean steamers make from sixteen to seventeen knots, or even on some occasions as high as eighteen knots. The latter speed is only a trifle over twenty-two miles per hour. This would be very fast for an ocean steamer, but, unfortunately, the English boats that do this are not intended for ocean navigation; and for river or still water craft this is not so good as has been done in this country by from five to seven miles per hour by more than one steamer. While the ocean steamers have been enormously increased in length and engine power, their speed is but very little better than it was years ago. The Atlantic passage is shorter by reason of a larger size, which is less effected by the sea. Fast vessels of moderate size are possible. The experiments of Winans in this country, M. Bazin in France, and Dr. Browne in England, together with the behavior of our monitors, as well as the circular Russian iron clads, all prove that if a vessel is designed so as to go through the waves without experiencing serious shocks from them, a speed of at least as great as 22 or 23 miles per hour may be attained at sea by a comparatively small vessel. On the North River, in the good old days of steamboating, each new boat, if fast, was expected to beat all previous recorded time, and if the railroad had not so far surpassed the boat there is no reason to suppose that the Mary Powell's 27 miles an hour would have remained the best performance, any more than the 25 miles per hour of some previous boat did. On the ocean there is every reason for speed and little to fear from railway competition, and yet the speed of ocean steamers has not increased in anything like the ratio that we know it is possible to attain. Even with our present style of ocean steamers, it is possible to obtain from 3 to 5 knots per hour better speed than the fast ocean steamers make, and that, too, with vessels not so large. The United States ship Idaho was an example of this Such a ship, of course, would be very sharp, and would have but small capacity for freight, but, as was suggested not long since in an article in the *Galaxy*, this would be an advantage. Clipper ships and yachts are by no means the best for cargo, but they are fast and can be made comfortable, and these are the best qualifications for a passenger boat. Such a vessel as the Idaho would not present any great novelties, and can be built without experimenting. Her molds and lines are preserved by one of our New York shipbuilders. Whenever any company is ready to try the experiment of putting a fast boat on the Atlantic service which can make the passage in much less than the average time, and be a safe and comfortable seaboat, they will find no difficulty in finding a man who can build the vessel.

The discovery by Mr. T. D. Edison, of a new manifestation of electricity which he calls "etheric force," described in another column, promises to be of great practical value. The newly discovered force was detected by a phenomenon often noted by electricians, but not hitherto regarded as important; but Mr. Edison's subsequent experiments show that it can be made use of in telegraphing under conditions which would render the battery current inoperative. In some experiments made on Tuesday evening, at his laboratory in Newark, Mr. Edison made an electric circuit containing a small magnetic coil. About an inch above the coil a small bar of cadmium was suspended by a wire connecting with the gas fixtures. When the electric current was broken by means of an ordinary telegraph key, sparks were obtained from any part of the gas pipe similar to those noticable at times in relays, and in stock printers flashing between the armature and the magnetic core. This has been commonly supposed to be a phenomenon produced by an induced current, but Mr. Edison finds that while, inductive electricity takes the shortest and quickest way of reaching the earth, the new force has no affinity for the earth; also that while induced current will not pass through glass and other substances known to be non-conductors of electricity, these offer no resistance to the passage of the new force. In fact, it possesses none of the qualities characteristic of electricity, save that it traverses a wire or other metallic

conductor. It does not deflect the spot of light when passed through Thompson's mirror galvanometer; it has no effect upon a solution of iodide of potassium; it does not require a circuit, but passes equally well through a straight wire, whether insulated or not; it has no affinity for the earth, and cannot be "grounded;" it has no polarity, and is apparently not affected by metallic resistance. If these phenomena, which Mr. Edison claims to have established by careful experiments, are substantiated by further and more convincing tests, the discovery will possess great practical importance. By means of it telegraphing may be done over non-insulated wires, and a separate service could be maintained through each metallic strand of a submarine cable. Mr. Edison may be mistaken in his first conclusions, but the important services he has already rendered in the simplification and perfection of electrical apparatus, give an importance to whatever he may say on the subject. The results of subsequent experiments will be awaited with interest.

We mentioned in a recent issue a curious freak of lightning which caused a railway collision on an English railway, where the block system of signals is used. It seems that a train was stopped by an electric signal, which showed that the line was blocked. After waiting some minutes a flash of lightning was seen, the arm of the signal dropped so as to give the signal of all right. The train was then ordered forward, the line being supposed to be clear. A short distance ahead, however, another train was encountered and a collision resulted. The signal it seems was given by the neutralization of the battery current by the electricity in the atmosphere, so as to allow the arm to drop and show the line clear. As yet there have been but few accidents in working railways on the, so-called, block system. The inventors and those interested in the introduction of the system as practiced in England have told us very little in regard to anything except its merits. Defects, doubtless, it has, and this accident shows one of them. With this system, however, we may expect very severe accidents when we have any at all. The system is an exceedingly expensive one, and yet it seems to be liable to failures of a very serious kind. In this country lines of telegraph are subjected at times to very great disturbances by atmospheric electricity. In Sept., 1859, during the great Aurora, the earth, or atmospheric, currents were so strong that, between Portland and Boston, messages were sent without the use of a battery. Since that time the feat has been frequently performed. Such disturbances may produce serious results, either by stopping trains by interfering with signals, or, by the same means, sending them forward when they should be delayed. Many persons unacquainted with the working of these systems think them the panacea for all the ills of train dispatching, but in view of the enormous expense involved, and the delays and annoyances occasioned we do not think it entitled to any considerable amount of praise, at least, not in its present form.

Scientific and Technical Notes.

A mill that is stopped is a bad thing for the operators, but a mill that won't stop when it is wanted to, is even worse. The *Pall Mall Gazette* tells the story of

A RUNAWAY MILL,

at Bollington, as follows: "The machinery suddenly bolted like a runaway horse and caused a general panic. It appears from some cause, "not at present thoroughly understood," the steam from the boilers overcame the control of the governors of the engine, and the machinery began, in consequence, to move at such a speed that the spinners threw their mules out of gear, and by so doing precipitated the catastrophe they were trying to avoid. The rapid revolutions of the engine caused the fly-wheel to break in pieces, and one huge fragment dashed upward through the floor of a grinding room above, and then through the roof, coming down through another portion of the roof. The other segments of the wheel were hurled through the walls, and altogether the building was wrecked to such an extent that the walls in some parts fell in, and the room above and the roof were demolished. A complete stampede took place among the hands, who number about 150, and they rushed out of the room in the wildest confusion. Happily, no lives were lost; but it is fully expected that the result of the casualty will be a three month's stoppage of nearly all work at the mill, the machinery of which, it is to be hoped, will be brought under some kind of control before it is put into action again."

Dr. Neumayer has presented to the geographical society of Berlin a remarkable apparatus for making

DEEP SEA SOUNDINGS BY MEANS OF PHOTOGRAPHY.

It consists of a brass box, hermetically closed, and having attached to it an apparatus resembling a vane or rudder. Within this box a thermometer and a magnetic needle are contained, behind each of which is placed sensitive photographic paper, and in front of each of which is a small nitrogen vacuum tube. The box contains also a small induction coil. When the apparatus is lowered to the required depth, the rudder causes it to take a direction parallel to the current there existing, and hence a definite direction with reference to the needle within. The thermometer soon acquires the temperature of the water outside, and becomes stationary. At this instant an electric current is sent to the box, which, by means of the induction coil inside, lights up the little nitrogen tube, the violet light of which, photographically very intense, prints, in about three minutes, the position of the needle and the hight of the mercury column upon the prepared paper. The current is then intermitted, the apparatus raised, the photographic tracing fixed, examined, and placed upon record.

A curious little engine, termed by the inventor

AN ELECTRO CAPILLARY MOTOR,

has been described by M. Lippmann. If a globule of mercury be placed in a saucer, together with a little solution of potassium bicromate, acidified with sulphuric acid, and it be touched upon the side with a point of iron, it will at once contract laterally, drawing itself away from the iron. This will break the contact; gravity will spread the globule out again, when it will again touch the iron and contract; and so on. The explanation of this phenomenon is to be found in the fact that the electric current developed on contact of the two metals, changes the capillary constant of the mercury, and hence its form. This is the action which M. Lippmann has utilized in his motor. In a glass tank filled with diluted sulphuric acid, are two small cylinders containing mercury. A bundle of capillary tubes, open at both ends, is placed in each cylinder, resting on the mercury, each bundle being connected above with one end of a walking beam, to the prolongation of which is attached a connecting rod, crank and fly-wheel. By means of a commutator on the axis of the fly-wheel, the mercury in each cylinder is alternately connected with a small battery; its capillary constant is changed, its ascent in the tubes increased, that side preponderates, and causes a semi-rotation of the fly-wheel. This sends the current to the other cylinder, which, acting similarly, completes the rotation. As many as 100 revolutions per minute have been obtained with this engine. Conversely, on rotating the fly-wheel by hand, a galvanometer in the current indicates the production of an electric current.

Experiments are now in progress at Earl Dudley's Round Oak Iron Works with a new

ARTIFICIAL FUEL FOR PUDDLING.

The *Iron Trade Circular* gives the following account of the experiments and fuel used: For some time past there have been experiments in the neighborhood, but it was understood that the crucial test was to be brought about on Tuesday, when some of Lord Dudley's pig iron was to be converted into finished iron by the aid of the patent fuel. Upon arrival at the Round Oak Works, the party were met by Mr. Casson, the manager, and conducted over the works. It was determined that the trial should be made with ordinary "pigs" in the Casson-Dormoy furnace, an invention which is being largely adopted in the works in consequence of the saving in the labor and the heavy produce from the materials supplied. The furnace being charged with the "bricks of patent fuel" and the "pigs," a very favorable opinion of the merits of the fuel was given by the manager and sub-manager. There was very little ash, not much "clinker," and the produce was satisfactory. The process for the production of artificial fuel, patented and invented by Mr. Dixon, has for its object the utilization of small coal, slack, whether of the bituminous or non-bituminous kind, coke dust, peat, or other similar carbonaceous substances, in a disintegrated or granular state. The manufacture is carried on in the following manner: A composition is formed with dextrine, pitch, fusil oil and aluminate of soda in suitable proportions. The dextrine forms the adhesive principle, while pitch is only used in sufficient quantity to waterproof the composition. It has been discovered by Mr. Dixon that fusil oil possesses the valuable property of causing complete combustion of the smoking carbon of the fuel, while alum soda ensures a complete coking of the fuel. These invaluable properties render this form of artificial fuel of the first importance as a steam generator for metallurgical operations, and alike for domestic purposes. It is of slightly higher specific gravity than coal—hard, dense, cohesion perfect, entirely waterproof, will stand rough usage without disintegrating or loss. It burns with a continuous bright red flame, comparatively smokeless, and as it cokes throws out a much larger heat than coal. Its absence from dust and dirt, freedom from sulphur, and the small quantity of ash which it leaves are special properties which other patent fuels do not possess. From the thorough admixture of the fuel spontaneous combustion is entirely avoided. Eighty tons may be placed in the same area as 100 tons of coal, thus saving a large amount of stowage in sea-going vessels. The fuel is being made at Himley (Lord Dudley's)—under a royalty, it is presumed—and one of the secrets of its success is that the slack is not ground but granulated only. The great advantage is that apparently worthless pit bank refuse, which is often a nuisance, is made as valuable, if not more valuable, than coal. Later in the day several specimens of cold bent iron 1¼ in. diameter, directly rolled from the puddled bars without ball furnacing, were shown. They were bent until they touched at the ends, and when nicked broke with the fiber perfectly free from crystal. The results of the experiments showed that a little under 18 cwt. of Dixon's patent fuel at short weight produced one ton of puddled bars of 2400 lbs. When it is borne in mind that with the old-fashioned single furnace it takes 30 cwt. (short weight) to produce the same weight, and in the Casson-Dormoy furnace from 14 to 16 cwt. of coal screenings, it will be seen that the patent fuel is a great improvement. Taken altogether, the day's experiments were a success.

Mr. T. A. Edison, of Newark, N. J., whose name is associated with some of the most important discussions in the art of telegraphy, and who stands high as an electrician, has discovered

A NEW MANIFESTATION OF ELECTRICITY,

which possesses much scientific interest. On the night of Nov. 22, while Mr. Edison and his assistant, Charles Batchelor, were experimenting in their laboratory, they made a discovery which is recorded as follows in their journal:

"In experimenting with a vibrator magnet, consisting of a bar of Stubbs' steel, fastened at one end and made to vibrate by means of a magnet, we noticed a spark coming from the core of the magnet. This we have often noticed before in relays; in stock printers, when there were iron filings between the armature and core, and often in the new electric pen. Always supposed it was inductive electricity, but happened to notice it when it seemed so strong that we suspected it might be something more than induction. Acting on the supposition, we found that by touching any portion of the vibrator or magnet with a piece of metal we got the spark. We then connected a wire to the end of the vibrating rod, and got a spark by touching a piece of iron to it."

The experimenters were led to try the effect of different metals in drawing off the spark, and soon found that cadmium was the most effective for their purpose. A bar of this metal was placed across the magnetic coil of the electric instrument, and a long wire attached to it. The electric circuit was thus drained of its current, which passed through the cadmium and the subsequent wire into a gas pipe, and so into the earth. Notwithstanding this interruption of the continuity of the circuit, it was found that when any metallic substance was brought into contact with the gas pipe, or with the intervening wire, a white spark was evolved with unusual brilliancy. Then it occurred to Mr. Edison that possibly this spark might be the manifestation of some unknown force acting simultaneously with electricity. Accordingly he applied to it the tests by which the presence of electricity is detected, and was surprised to find that the testing instruments gave no indication of the electric presence. A delicate gold-leaf electroscope was undisturbed by the new manifestation, conclusively proving either that electricity may manifest itself in entirely new phases, or that under certain conditions it gives birth to a new and distant force. Mr. Edison has named the new principle "etheric force." This discovery was put to test by various experiments, and the following results obtained: That the new force is non-polar, radiating in straight lines like heat; that it is capable of transmission to indefinite distances through an uninsulated wire; that it is not affected by the ordinary non-conductors of electricity, as glass, &c., and that it is retroactive, the spark being obtainable when the wire is turned back so as to touch itself. Mr. Edison is of the opinion that it can be made to manifest itself otherwise than by the spark, and that it may be derived from heat independently of electricity.

In order to put it to a severe test he connected a wire from his laboratory with the ordinary telegraph wire, and by permission of the telegraph company was enabled to make a circuit extending from New York to New Brunswick, N. J., both ends terminating in his laboratory. After passing through this great extent of wire the electric current was diverted, the cadmium wire attached, and a series of sparks evolved as readily as though the circuit had been only a yard long. The practical value of this discovery consists in its manifestation of the possibility of sending messages over cables or wires not insulated. Instead of employing poles or glass insulators it seems to be necessary only to make an attachment to the railroad track or to a wire laid in the earth, and the message can be as readily transmitted as by the present process. The expensive insulated cables now used for ocean telegraphy can be rivaled by cables of much cheaper construction, and in other ways the present cumbrous apparatus necessary for utilizing electricity may be avoided.

Some Recent Developments in the Technology of Iron.

The story of Nielson's "lucky hit," as the invention of the hot blast has been termed, has been so frequently rehearsed of late that it is not proposed to inflict it in any detail upon our readers. It is sufficient for our purpose briefly to note the amount of the saving it effected when first applied in Scotland, and to contrast that saving with its results in other quarters.

In 1829, says Scrivenor, at the Clyde Iron Works, using coke and cold air, 161 cwt. of coal was used per ton of pig. In 1830 using coke and a blast heated to 300° Fah., 103 cwt. of coal only was used. In 1833, with a blast of nearly 620° Fah., and raw coal, only 45 cwt. were used. But to the consumption of coal with hot blast must be added the 8 cwt. used in the blast stoves, making the relative figures 161, 111 and 53 cwt. There was a further economy in the 30 per cent. increased yield and the fact of only two-thirds the quantity of blast and limestone before necessary being required.

The figures of the French commissioner, who investigated the subject in 1834, give very similar results.

	1829.	1831.	1833.
For fusion cwt. of coal	133 (as coke)	86 (as coke)	40 (raw)
For heating air	nil	5	8
For blw'g engines	20	7	11
Total coal used in cwts.	153	98	59
Blast	cold	450° Fah.	612° Fah.

Bell, alluding to these figures, very fairly points out that a considerable portion of the economy here shown is due to the fact that with the hot blast raw coal is used, and that therefore the loss of carbon which takes place in the coking process helps to swell the difference between the coal consumptions under the two systems. By the aid of the hot blast the Scotch iron masters were saved not less than 26/ per ton of pig. In Staffordshire the use of heated air reduced the coal consumption from 4 tons to 2½ tons. In the United States anthracite furnaces the saving amounted to 50 per cent. of the fuel formerly used, while the production was doubled. With bituminous coal the economy was not so marked, and in the charcoal furnaces it was not more than 20 per cent. But the case was far otherwise in South Wales. Dufrenoy gives the consumption of raw coal at the Plymouth Works under the hot and cold blast *regime* as 36 and 53 cwt. respectively, while the average saving to the Welsh maker was alleged to be not more than 2/ per ton of pig. In France the advantage was still less than in Wales; in certain furnaces quoted by the same authority, working with a very small fuel consumption, the only result from the adoption of hot blast was that the furnace ran gray instead of white pig as before. In the charcoal furnaces of Sweden, on the other hand, with a blast heated to 660° Fah. there was a saving of one-third of the fuel used with the cold blast, and with a blast heat of 390° the saving was 24 per cent.

For about 20 years from the date of Neilson's patent it was hardly attempted to materially exceed the temperature of blast which was used in the Clyde Works in 1834. The breeches-pipe, pistol pipe and Wasseralfingen stoves were designed and modified rather with a view to economize fuel in the stoves than to impart any greater heat to the air, while the material, iron, of which they were made seemed little capable of long withstanding the effect of temperatures higher than 700° or 750° F., without frequent fracture of the pipes and burning away at the joints from oxidation of the metal. But the general use in the blast stoves of the hitherto generally wasted furnace gases acted as an inducement to find a profitable application for their superfluous calorific power, which was far from being exhausted when the heat imparted to the blast was hardly greater than the sensible temperature of the gases before their combustion.

Notwithstanding many practical difficulties, when the idea that 650° or 750° F. was not a natural limit to the blast temperature, and that an increase might be beneficial had fairly presented itself to the technical mind, it was found that cast iron stoves could be pressed to give over 100° higher temperature, and yet escape the immediate destruction which had been predicted for them. Indeed, it has recently been established at Ayrsome and Newport, that a temperature of nearly 1100° F. can be maintained with a modified U-pipe stove of cast iron. For these excessive temperatures, however, it cannot be denied that iron is not a desirable material to use, as regards durability and economy. In the Siemens-Cowper and Whitwell stoves, however, the means of indefinitely increasing the limit of blast temperature is furnished. The principle on which they both act is that of the well known "regenerator." Two fire brick chambers are necessary, of which each is used alternately as a combustion chamber and for a blast heater, the air during the latter period receiving back from the fire brick the heat which this brick had absorbed from the flame and gases during the previous two hours.

The difference between the stoves of Cowper and Whitwell is simply a matter of detail. In the former the chambers are filled with masses of fire brick, so arranged as to give the largest possible area for the absorption and communication of heat. As this form of stove is somewhat difficult to clean, Whitwell has devised a valuable modification, in which the masses of brickwork are replaced by vertical walls of fire brick, which are so arranged as to render the removal of the deposited dust by scrapers a comparatively easy matter, while the divisions are so placed as to oblige the gases to follow a tortuous course before they leave the stove, affording ample time for heat abstraction and the reverse process, with a minimum of frictional resistance.

The fire brick stove is superior to the cast iron stove, not only in its power of imparting temperatures far beyond the utmost limits that can be reached by the latter, but also in its freedom from leakage at the joints, its less obstruction by friction to the passage of the blast, and its power of storing up heat and subsequently giving it up when blast is for any reason wholly or partially intermitted, an occurrence which is often fatal to metal stoves, as the pipes frequently melt when not exposed to the cooling influence of the air current passing through them.

In view of the fact that a blast temperature of nearly 1500° Fah. is attainable with modern stoves, it becomes a question of the greatest importance to determine whether the use of such a temperature is desirable, whether a still higher one should be aimed at, or if there be any limit to the advantages to be derived from pouring heat into the furnace through the tuyeres, and, if so, what that limit is. Siemens, Whitwell and Cochrane support the view that the more heat is introduced with the blast the greater, *a priori*, will be the economy of working, and that the blast might probably be raised with advantage to a temperature even higher than that already attained. Bell, and a considerable following of experienced ironmasters, deny that any advantage is gained by using a blast hotter than can be delivered by a well arranged iron stove, *i. e.*, with a temperature of about 900° Fah. Bell, indeed, puts it directly that heating beyond 900° Fah. represents so much waste. It will be admitted that this is an important disagreement on a vital point.

To arrive at any conclusion, it is necessary to consider briefly the theory and functions of the hot blast, pure and simple, as well as the relative position of the hot blast and what we may term the superheated hot blast, or blast which carries a temperature exceeding 900° Fah.

The economy of the hot blast has been assigned to many and contradictory causes, of which the chief may be considered to be as follows:

With hot blast a considerable proportion of the heat necessary for the purposes of smelting and reduction is furnished by the consumption of comparatively inexpensive fuel, whether as small refuse, coal, or waste gases. In the blast stove, moreover, a larger proportion of this fuel is oxidized to its maximum extent than could be accomplished in the blast furnace, where we have seen that carbonic oxide is produced in much larger proportion than the higher oxide. Yet, on the other hand, it is to be observed that the loss of heat by radiation is greater in the blast stove than in the furnace. It has been estimated that nearly one-half the heat developed in the stove is lost before the blast arrives at the tuyeres; though this is eminently a preventible waste which might be largely reduced by careful packing of the blast mains and other precautions, such as have been successfully adopted in Germany. Again, by heating the air of the blast in a vessel exterior to the furnace itself, the furnace hearth is relieved of the cooling effect which would otherwise be exercised by the expansion of the blast on its entry into the furnace. This circumstance is directly of importance in increasing the yield of the furnace by accelerating the smelting process, and thus tending to preserve a balance between reduction and fusion. If this equilibrium between the two chief functions of the furnace be disturbed, waste of fuel is inevitable, as, when the contents of the furnace are not melted as rapidly as they are reduced, the shaft is occupied by materials on which the gases can exert no further action, and they are in consequence discharged with their reducing power unutilized.

A still more active element in the economy of hot blast arises from the fact that the heat it introduces is unaccompanied by any increase in the volume of the column of gas which rises through the furnace. Blast heat is, as it were, unadulterated caloric. This has a threefold value. In concentrates the heat effects in a small volume of gas, instead of dissipating them over a much larger area. We have, therefore, a high temperature at the hearth. The difference in intensity when an unit of heat is expended on raising the temperature of a large and small volume of combustion products is well known. The smaller volume of gas which, with the hot blast, accompanies the development of the necessary number of heat units, also ascends through the furnace with a much less velocity than the larger volume which would result were the blast heat replaced by the combustion of carbon at the hearth, and a corresponding increase of gas. The greater the amount of heat obtained from the blast, the smaller will be the volume and velocity of the furnace gases, and, consequently, the greater opportunity will these gases have, by their longer contact with the charge, to become oxidized to the maximum extent, and also to part with as much as possible of their sensible heat. Thus it is found that the hotter the blast the colder will the gases be. Bell appears to have been the first to thoroughly appreciate the effect of a diminished volume of gas on the economy of the furnace. So Akerman observes that the heat introduced by the blast, being unaccompanied by concurrently formed gases, is entirely available in the furnace, as no part is necessarily withdrawn in waste gas at the tunnel head unused, as is the case when heat is generated by combustion in the furnace.

Very valuable, too, is the high temperature stove for the facility with which, by its aid, the working of the furnace can be controlled.

The question of the influence of the hot blast in promoting a more active combustion, and, consequently, intense heat in the neighborhood of the tuyeres, has been the subject of much diversity of opinion. Percy, Kerl and Sandberg are apparently supported by Tunner in their belief that carbon is oxidized more rapidly by a heated blast, and they would probably accept as a corollary that it is also oxidized more completely, *i. e.*, with a considerable formation of carbonic acid. Thus Kerl insists on the greater affinity of heated oxygen for carbon over cold, and the more ready permeability of the fuel to heated air. Akerman and Bell, on the other hand, contend that, with both hot and cold blast, the formation of carbonic acid is but momentary, if it takes place at all, and that, practically, the heat in the lower regions of the furnace is solely due to the monoxidation of the fuel. The latter metallurgist even asserts that, were the allegation of the superior rapidity of combustion with hot blast well founded, the slower combustion with cold blast would be attended by the considerable formation CO_2, and, consequently, the higher temperature. Moreover, he distinctly traverses the statement of the very superior temperature of the hearth in the hot blast furnace.

Tunner, indeed, has recently admitted that he has failed to prove the increased intensity of hot blast, which Sandberg believed he had demonstrated. The Leoben professor now contents himself with asserting that a higher temperature demonstrably exists in the lower parts of a hot blast furnace than when cold blast is used. In the confirmation of Bell's view is the fact that at Eisenerz, with 200° C. blast 11 per cent. CO_2 was found at the tuyere level, while at the Wear furnace, with a far hotter blast, much less CO_2 existed at this level.

Each of the elements of the superiority of the hot blast to the cold here enumerated would seem capable of being claimed for a superheated blast over a moderately heated one. Comparing a blast of 1400° with one of 800° or 900°, cannot it be claimed for the former that it will increase the hearth temperature, reduce the volume of gases, furnish a larger contingent of the total requisite caloric from inexpensive and thoroughly consumed fuel, and otherwise show the same advantages over the lower temperature that this latter has unquestionably over the unheated blast?—*Iron*.

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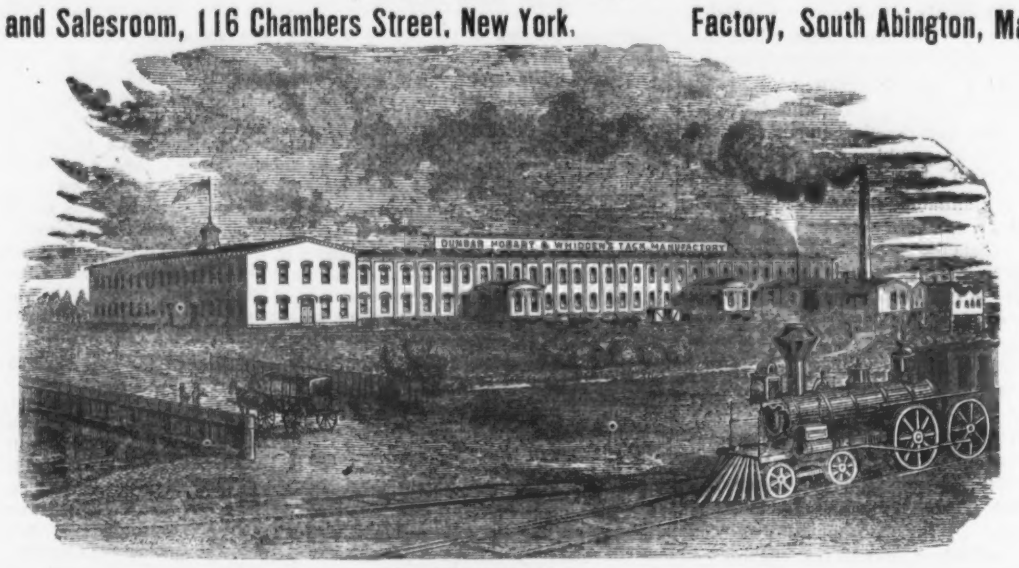

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PART III.

(Continued.)

In manufacturing enterprises it will be found easier to obtain the necessary capital from a number of persons by subscriptions to stock than to get it from an individual in a general or special copartnership.

The following is given as a complete form of organization for such company, under the general laws of the State of New York:

SUBSCRIPTION LIST OF THE —— IRON WORKS.

The parties subscribing hereto being desirous of taking shares of stock in a company to be organized by the above name, under the general manufacturing law of the State of New York, do hereby mutually agree, each with the other, as follows:

I. That we will take the number of shares of stock in the said —— Iron Works set opposite our names respectively.

II. We hereby agree to pay for the said shares of stock subscribed for by us respectively, as follows, viz.: Twenty-five per cent. thereof on the day after the organization of said company, by the filing of the Certificate of Incorporation as provided for by law, and the remaining seventy-five per cent. thereof as the same may be called for by the Board of Trustees of said company, in sums not exceeding twenty-five per cent. upon each call.

Dated, ——, 187

Names of Subscribers	Residence.	No. of Shares

CERTIFICATE OF ORGANIZATION.

Charter.

The undersigned have this day formed a corporation, under and in conformity with a statute of the State of New York, entitled an Act to Authorize the Formation of Corporations for Manufacturing, Mining, Mechanical or Chemical Purposes, passed February 17th, 1848, and the Acts amendatory thereof; and in compliance with the requisitions of the aforesaid Acts, we do hereby certify as follows:

First.—The corporate name of the said company is the "—— Iron Works."

Second.—The object for which said company is formed is the manufacture and sale of iron work for building purposes, and to do a general iron founding and machinery business, and the manufacturing of articles incidental thereto.

Third.—The amount of capital stock of said company is one hundred and fifty thousand dollars.

Fourth.—The number of shares of which said stock shall consist is fifteen hundred, of one hundred dollars each.

Fifth.—The number of trustees shall be six; and the names of the trustees who shall manage the concerns of the company for the first year are ——, all residing in ——.

Sixth.—The town and county in which the operations of said company are to be carried on is ——.

Seventh.—The term of existence of said company is to be fifty years.

Dated, ——, 187

(Signed.) × L. S.
× "
× "
× "
× "

State of New York, } ss:
—— county of —— }

On this —— day of ——, 187 , before me came ——, to me personally known to be the individuals described in, and who executed, the foregoing Certificate of Incorporation; and he severally acknowledged, each for himself, that he executed the same for the purposes therein set forth.

(Signed.) ——,
[L. S.] Notary Public.

Endorsed: Filed ——, 187 .

State of New York, }
Office of the Secretary of State. }

This is to certify that the Certificate of Incorporation of the "—— Iron Works," with acknowledgement thereto annexed, was received and filed in this office on the —— day of ——, 187 .

Witness my hand and seal of office of the Secretary of State, at the city of Albany, this —— day of ——, one thousand eight hundred and seventy ——.

[L. S.] (Signed.) ——,
Secretary of State.

State of New York, }
—— county of —— }

This is to certify that the Certificate of Incorporation of the "—— Iron Works," with acknowledgment thereto annexed, was received and filed in this office on the —— day of ——, 187 .

Witness my hand and seal of office of County Clerk, at ——, this —— day of ——, one thousand eight hundred and seventy ——.

[L. S.] (Signed.) ——,
County Clerk.

FIRST MEETING OF TRUSTEES.

At a meeting of the Trustees of the "—— Iron Works," held at the office of the company, on the —— day of —— 187 , at 12 m. present —— Mr. —— was appointed Chairman and —— Secretary.

The Certificate of Organization was read and approved.

On motion of ——, duly seconded, it was resolved to proceed to the election of officers.

The chairman appointed —— and —— as tellers, who received the ballots and reported that there were six votes cast for —— as President; the same number for —— as Vice President; the same number for —— as Treasurer; the same number for —— as Secretary; and the same number for —— as Manager; all of whom were thereupon declared to be unanimously elected to fill the designated offices for one year, and until others should be elected in their stead.

Here, Mr. —— assumed the Presidency; and —— the Secretaryship.

On motion of ——, duly seconded, it was resolved that the Chair appoint three Trustees to draft By-Laws, whereupon he appointed Messrs. —— and ——, who presented the following, which were read and unanimously adopted:

[See BY-LAWS, printed below].

On motion of ——, duly seconded, it was resolved that the subscriptions to the capital stock be called in, payable to the Treasurer, in four instalments of 25 per cent. each; the first on ——th inst.; the second on the ——th day of —— next; the third on the ——th day of next; and the fourth on the ——th day of —— next. If any party desired to pay their subscription in full, the Treasurer was authorized to allow interest at and after the rate of 7 per cent. per annum for all sums paid in advance.

On motion of ——, duly seconded, the —— Bank was selected as the depository of the funds of the Company.

On motion of ——, duly seconded, the salary of the Manager was made $ —— per annum, payable monthly.

On motion of ——, duly seconded, the following Trustees were appointed an executive committee, viz.: —— and ——

On motion of ——, duly seconded, it was resolved that this Company now proceed vigorously in perfecting the arrangements for business; and also proceed with such expenditures for buildings, tools, materials, etc., as in the opinion of the Trustees may be warranted in view of the funds to be received and the prospective state of the trade.

It was also resolved that 250 copies of the proceedings of this meeting be printed, together with the By-Laws, Charter, etc., in pamphlet form; and the Secretary directed to furnish each subscriber of stock with one copy.

Adjourned to meet on the —— day of —— at —— p. m. (Signed) ——
Secretary.

BY-LAWS OF THE —— IRON WORKS.

Article I.

MEETINGS OF STOCKHOLDERS.

1. All meetings of Stockholders shall be held at the office of the Company, in the ——, and the annual meeting for the election of Trustees shall be held the first Monday in February, at 12 o'clock at noon, and the polls shall be kept open one hour. If for any cause an election of Trustees shall not be had on the day above designated, it may be held on any subsequent day, to be fixed by the Board of Trustees.

2. Notice of all meetings of Stockholders shall be given at least ten days prior to such meeting, by advertising the same in at least one —— newspaper published in ——, and notices thereof sent to each Stockholder to his residence or address, as it appears on the books of the company.

3. All elections by the Stockholders shall be by ballot; Stockholders may vote in person or by a written proxy, and each Stockholder shall be entitled to as many votes as he represents shares of stock; and the persons receiving the greatest number of votes shall be Trustees for one year, and until their successors shall have been elected.

4. Special meetings of the Stockholders may be called by the president or any two of the Trustees, when deemed necessary, of which five days notice shall be given to each Stockholder in the manner provided by section 2.

Article II.

THE BOARD OF TRUSTEES.

1. The Board of Trustees shall consist of —— members, a majority of whom shall constitute a quorum for the transaction of business.

2. All meetings of the Board of Trustees shall be held at the office of the Company, in ——.

3. In case of failure to hold any election, the Trustees shall hold over and continue in office with full authority until a new election is held.

4. No person shall be a trustee who is not the holder or owner of at least ten shares in the capital stock of this company.

5. No Trustee, as such, shall receive any salary or compensation for his services; but this is not to preclude any Trustee from holding any other office in the said Company, or performing any services for said Company, and receiving compensation therefor.

6. Stated meetings shall be held on the first Monday in each month, and special meetings may be held upon the call of the President, or any two Trustees, due notice thereof being given by the Secretary to all the members, either in person or by mail.

7. The order of business of the meetings of the Board of Trustees shall be conducted according to usage.

8. The officers of the Company shall consist of a President, Secretary, Treasurer and Manager, and any two of these offices may be combined in one person or two.

9. The Board of Trustees, as soon as may be after their election, shall hold a meeting and elect by ballot or otherwise a President, Vice-President, Secretary, Treasurer and Manager, who shall hold their offices for the ensuing year, and until their successors shall have been elected and duly qualified to enter upon their respective duties; they shall also appoint an Executive Committee, to consist of two Trustees with the President.

10. The Board of Trustees shall fix the compensation of the officers; they shall declare such dividends from the net earnings or profits of the Company when, and as often as the state of the funds will warrant; they shall, for cause, remove any officer of the Company, but no officer shall be removed until after investigation and a concurrence of a majority of the Board of Trustees.

11. They shall select a bank or depositaries, in which all the moneys of the Company shall be deposited, to the credit of the —— Company, subject to the draft of the Company, signed by the President and Treasurer or the Vice-President and Treasurer, and made payable to the order of the party or parties to whom it is to be paid, when practicable.

12. They shall make a report and render an account to the Stockholders at their annual meeting, showing in detail the situation of the property and financial affairs of the Company.

13. They shall have power to fill any vacancies which may occur by death, resignation, or otherwise (in the interval between the Annual meetings of Stockholders), in the Board of Trustees and Executive Committee, and in the offices of President, Vice-President, Secretary and Treasurer and Manager.

14. They shall appoint three Inspectors of Election to receive the ballots from Stockholders for Trustees, prior to their Annual Meeting.

Article III.

EXECUTIVE COMMITTEE.

The Executive Committee shall superintend the finances of the Company, examine and audit the accounts; they shall have power to make temporary loans of surplus funds, and attend to such duties as may be necessary during the recess of the Board of Trustees, or may be designated to it by them; they shall keep minutes of all their proceedings, and report the same to the Board of Trustees.

Article IV.

PRESIDENT.

1. It shall be the duty of the President to preside at all meetings of Stockholders and Trustees (except those convened to remove him or inquire into his official conduct), to sign all documents and contracts authorized by the Board of Trustees, to sign all checks, notes and certificates of stocks, and to perform all such duties usually incidental to such office and required by the provisions of the act of incorporation and these By-Laws.

2. In case of sickness or absence of the Secretary, Treasurer or Manager, he shall appoint some person to perform the duties of either until the Board of Trustees shall be convened.

Article V.

VICE PRESIDENT.

1. It shall be the duty of the Vice-President to attend to the business of the company (Sundays and holidays excepted); to attend to the estimating and procuring of work, and to the execution of the same; to the employing of labor and the proper mechanical conduction of the iron works; to the purchasing of materials for the business, and shall generally exercise a supervision and control over the affairs of the company, subject to the approval of the President and directions of the Board of Trustees. In the absence of the President he shall preside at all meetings of Stockholders and Trustees.

Article VI.

SECRETARY.

1. It shall be the duty of the Secretary to be in attendance at the office of the Company during business hours, to give the necessary notice of all meetings of Stockholders and Board of Trustees; he shall record the proceedings of the same in a book to be kept for that purpose; shall keep all proper books of accounts for the business of the Company, with a Stock Ledger, Transfer Book, and such other books or papers as the Trustees may direct; keep the seal of the Company, register and sign (with the President, and countersigned by the Treasurer) all certificates of stock, and generally shall perform such services and duties as usually appertain to his office in a corporate body, and are required by the provisions of the act of incorporation; all the books, papers and correspondence shall be kept in the office of the Company, and considered in his possession and charge, but open at all reasonable times during business hours to the inspection of the Trustees.

Article VII.

CERTIFICATES OF STOCK.

1. The Certificates of Stock shall be numbered and registered as they are issued; they shall exhibit the holder's name and number of shares, and shall be signed by the President and Secretary, and countersigned by the Treasurer, and have the seal of the Company affixed thereto.

2. Each Certificate of Stock shall express upon its face that the share or shares thereby represented are full paid stock, and not liable to further calls or assessments.

3. The said certificates shall be in the usual form.

4. Transfers of Stock shall be made on the books of the Company in the presence of the President or Secretary, or authorized officer or agent, upon the surrender of the certificate, either by the holder in person or by attorney, and the surrendered certificate shall be canceled and pasted on the margin in the book from whence it was taken when issued.

5. The Transfer Book shall be closed at least three days previous to an election, or the payment of dividends, and the dividend shall be paid to the Stockholders standing on record at the closing of the books.

6. If any person claim a certificate of the Stock of this Company in lieu of one lost or destroyed, he shall make an affidavit of the fact, and state the circumstances of the loss or destruction, and he shall advertise in one or more of the daily newspapers, to be designated by the President, for the space of one week, an account of the loss or destruction, describing the certificate, and calling upon all persons to show cause why a new certificate shall not be issued in lieu of that lost or destroyed; and he shall transmit to the Company his affidavit and the advertisement above mentioned, with proof of its due publication, and shall give to the Company a satisfactory bond of indemnity against any damage that may arise from issuing a new certificate; whereupon the President may issue a new certificate of the same tenor and amount with that said to be lost or destroyed, and specifying that it is in lieu thereof.

Article VIII.

TREASURER.

It shall be the duty of the Treasurer to attend to all collections, receive and deposit all moneys where directed, and to pay and dispose of the same under the direction of the Board of Trustees; sign all checks, drafts and notes, sign all certificates of stock with the President, keep correct accounts of the same, and give his time and attention to the duties of his office. He shall keep his bank account in the name of the Company, and shall render a statement of his cash account at each regular meeting of the Board of Trustees. He shall at all times exhibit his books and accounts and papers to any Trustee upon application at the office during business hours.

Article IX.

MANAGER.

It shall be the duty of the Manager to attend daily to the construction in a proper and right manner of all work; to see and know that every part thereof is made of the proper material, in the right manner, and of good workmanship; to make estimates, receive work, employ labor, and superintend the mechanical departments of the company.

Article X.

SEAL.

A suitable seal, having the words "—— Iron Works ——," with such other device as the Trustees shall select, shall be provided, which shall be under the charge of the President, and the affixing of the Seal to contracts and instruments, together with the signatures of the President and Treasurer, shall bind the Company.

The affixing of the Seal, however, to contracts for iron work, &c., to be executed, such as are usually drawn up by architects, engineers, etc., shall not be necessary; the signatures of the President and Treasurer will alone be required. In signing contracts for work amounting to under $30,000 the signature of either the President, Treasurer or Manager shall be sufficient and binding.

Article XI.

BY-LAWS.

These By-Laws shall not be altered, except by the consent of two-thirds of the whole Board of Trustees; and all proposed amendments or alterations shall be submitted to the Board, in writing, at a previous meeting to that at which the action of the Board shall be had thereon, and previous notice in writing shall be given by the Secretary to each Trustee of the Company of the contemplated amendments, and the time when they will be passed upon.

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OPINION.

I have considered the papers submitted to me relating to the organization of the —— Iron Works, and am of opinion that the certificate of incorporation of said Company is drawn, executed and filed in conformity with the requirements of the General Manufacturing Corporation Acts of February 17, 1848, and of the acts amendatory thereof, and that said Company is duly organized under said acts, and entitled to all the powers and privileges accorded thereby.

I have examined the minutes of the organization of the Company, and the preparatory subscription agreement for forming the Company, and they seem to be sufficient in form and according to law.

This Company being thus duly incorporated, the stockholders are under no personal liability except as the acts in question provide, viz.:

The stockholders are severally liable for all the debts of the Company (each to the amount of his stock) until the capital is all paid in and a certificate thereof duly made and recorded.

The stockholders are always jointly and severally liable for all debts due to laborers, servants and apprentices for services performed by the corporation.

There are liabilities in addition on the *Trustees;* they cannot make loans to stockholders, nor make false statements in any public report or notice, nor allow indebtedness beyond the amount of the capital stock, nor declare a dividend reducing its capital; and they must not omit to file and publish the annual statements of the condition of its affairs, as required by the statutes. These, however, are plain prohibitions, applicable to *Trustees* only, and not embraced in the ordinary liability of mere stockholders.

——,
Attorney, &c.

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NOTE.—Small and cheap editions of the act for the formation of companies are published, giving in epitome their privileges and restrictions, and arranged with a special view to convenience and conciseness.

Meteoric Iron.

In a note in relation to the mass of meteoric iron which fell in Dickinson county, Tenn., in 1835, Mr. J. Lawrence Smith, of Louisville, Ky., says:

Every metallic particle in the interior of a meteoric stone is a complete miniature type of the large masses of meteoric iron which have been discovered in different parts of the world, but not seen to have fallen at periods anterior to the date of their discovery. And it is an interesting fact in celestial meteorology that the stony meteorites, with their little particles of metal, fall with comparative frequency. Yet the fall of iron masses free from earthy matter is so rare that we have but four authenticated cases: that of Agram, in Croatia, in May, 1751; that of Braunau, Bohemia, in July, 1847; that of Victoria, Africa, in 1862; and the one which now forms the subject of this communication, which fell on the 1st of August, 1835, near Charlotte, Dickson county, Tenn., U. S.; lat. 36° 15', long. 87° 22'. A short description was given by Professor Troost, of Nashville, and published in *Am. Journ. Sci.*, 1845. Professor Troost dying very shortly after that period, his cabinet of minerals and other objects of natural history were placed in boxes by his executors, and have remained thus until within the past few months, when they passed under my control. The scientific world knowing so little of this meteoric iron, I at once proceeded to its examination; and as only a small part of one end, weighing two or three hundred grammes, had been cut off, it was easy to restore that from a drawing, and obtain a perfect cast of the mass, which had been finished in all respects to resemble the original, both in form and color. My reason for making the present communication is to call attention to the remarkable features of this most interesting meteorite, which, although it is forty years since it fell, has not been seen by a half-dozen scientific men.

This meteorite fell during the daytime, in a field where several persons were at work, frightening a horse attached to a plow, who ran wildly about the field dragging the plow after him. It struck the ground at the root of a large oak, descending at rather an acute angle, and burying itself in the roots of the tree. The sky was cloudless, and a noise was heard preceded by a vivid light. Other particulars connected with its fall, as well as a description of its size and form, have been already published by Professor Troost. It is of an elongated kidney shape and remarkably symmetrical form, the metal being bright and almost polished on many parts of the surface, and it has remained in this condition ever since it was discovered, although exposed to such atmospheric conditions as usually rust and tarnish iron; it is in this respect unique among meteoric irons, as well as in another particular first noted by Professor Troost. Although to the naked eye the surface has the appearance of smooth cast iron, the smoothness of the surface in many parts disappears when examined through a lens; it is then seen to have a articulated surface, formed by the edges of thin laminæ of metal, separated from each other by an apparently semi-fused or sluggy matter. These laminæ, running in an inclined position into the mass, intersect one another at angles of 60°, and, forming equilateral triangles, would divide the mass into regular octahedrons.

Another noteworthy fact in connection with this iron (which is soft and tough) is that, when cut and polished, it will resist the tarnishing effects of the ordinary vapors of the laboratory, as I have pieces which have been thus exposed for several months.

By the agency of heat or acid the Wiedmannstatian figures are developed with exquisite beauty, not equalled except by three or four known meteoric irons. In connection with these figures I will call attention to the delicate parallel lines inside of these figures, which I pointed out several years ago as being peculiar to certain of the irons, they being not contained in all Wiedmannstatian figures, and which I designate by the term "laphamite markings."

This iron is not absolutely compact, for one can trace, even with the eye, minute cavities which are distinctly visible with a lens; but I have not yet been able to detect any schreibersite, either on the surface or on the interior of the mass.

Its specific gravity is 7·717.

On analysis it was found to consist of:

Iron	91·15
Nickel	8·01
Cobalt	0·72
Copper	0·06

No trace of sulphur was detected, and so minute a trace of phosphorus that only a few exceedingly small crystals of phosphate of magnesia and ammonia could be discovered in the test made with a gramme of the iron, representing only a small fraction of a milligramme of phosphorus. In fact, I have never yet analysed a meteoric iron containing so little phosphorus. In regard to the gaseous contents of this iron, the following were the results obtained by Prof. W. Wright, who made an examination of them at my request:

"The iron being exposed to a red-heat gave a little more than twice its volume of gas. It can be estimated as 2·2, without an appreciable error. It did not appear to be given off readily, and doubtless a larger portion would have been obtained if the iron had been in a more thoroughly divided state. An analysis of the gas gave—

H	71·04
CO	15·03
CO_2	13·03

There did not appear to be any appreciable quantity of nitrogen."

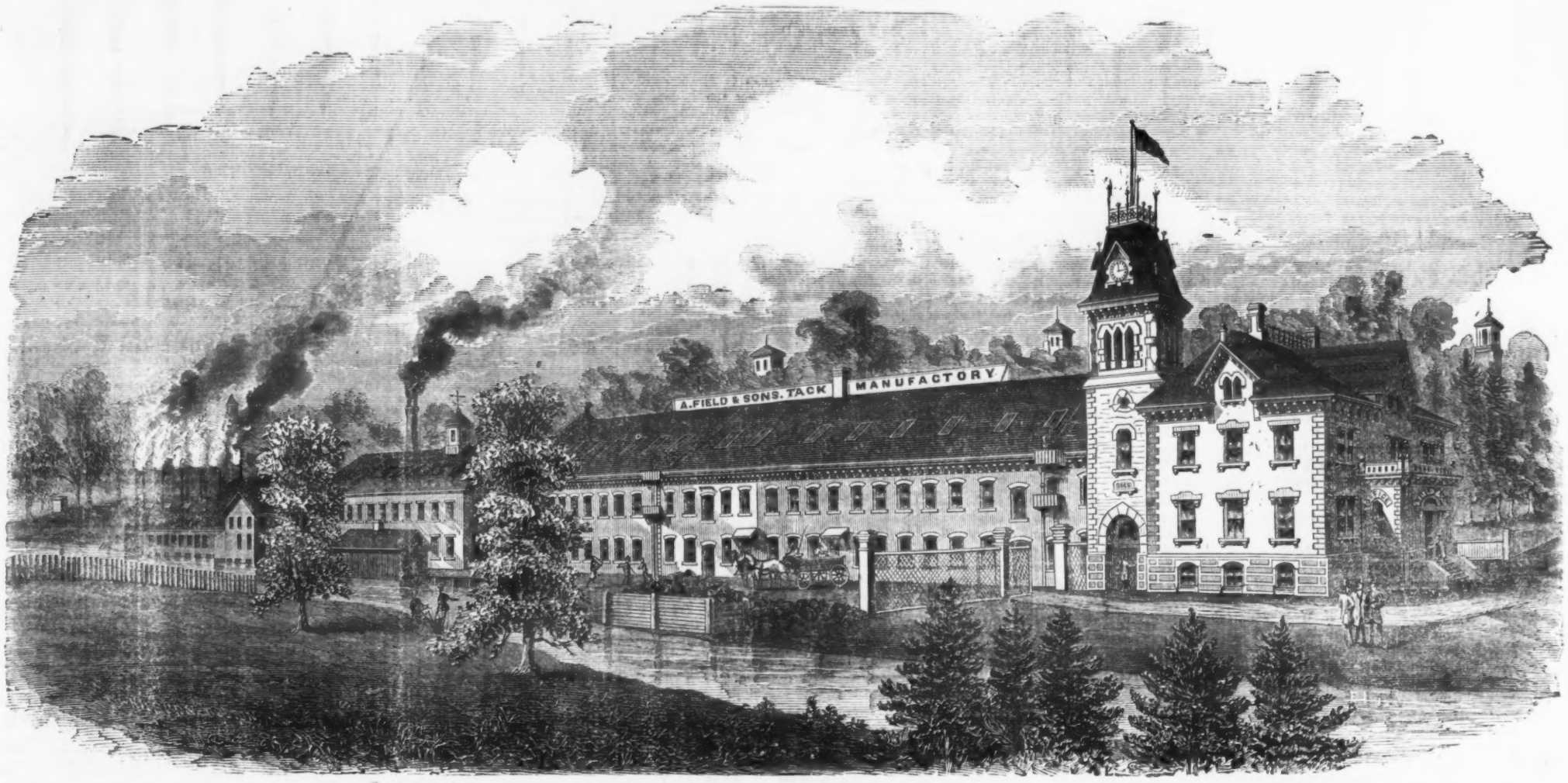
It is a question of no small interest, in connection with the fall of meteoric irons, whether or not they are heated to a sufficient degree of intensity to fuse the surface of the metal. The present meteorite would appear to solve this question in the negative; for if the surface had been melted the delicate reticulated structure, which is discoverable by the gas, would have disappeared, and it would have had an irregular melted exterior. In the present case this oxide exists on the edges and between the striæ, which serves to show that the surface of the iron, although not melted, was nevertheless intensely heated, and had been preserved from fusion only by the rapid conduction of the heat from the circumference to the center. And this should be the case with nearly all, if not all, the masses of iron which have fallen.

The Braunau iron was not near the point of fusion, otherwise it would have set fire to the rafters of the house in which a part of it was imbedded at the time of its fall, and the surface of that iron precludes the idea of its having been fused. If this generalization of iron be correct, it has an important bearing upon the hypothesis of the manner in which the Ovifak iron (supposing it to be meteoric) penetrated the basalt in scattered particles just at the time of the outflow of the basalt in a plastic state; for if the iron was not melted in its passage through the air, it could not have penetrated the basalt in such a manner that the particles are completely surrounded by terrestrial basalt. This fact, in connection with many others, lead me more and more strongly to the conviction, in common with some others, that the Ovifak iron is terrestrial.

On the whole, the iron just described is the most interesting specimen of meteoric iron yet known.

The Coshocton (O.) Iron and Steel Works, which suffered a complete collapse from the panic of 1873, are running again at full capacity. The pay roll to workmen alone amounts to $2000 and $3000 per month.

ESTABLISHED 1827.



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TINNED CARPET
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SHOE OR LASTING
ROUND HEAD
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EVERY STYLE OF

FINISHING
TRUNK
CLOUT
CHAIR
CIGAR BOX
HUNGARIAN
HOB
SILVERED OR JAPANNED LINING
SILVERED OR JAPANNED SADDLE
TUFTING
COPPER CUT

NAILS

BOAT REGULAR
BOAT CHISEL POINTED
FINE TWO PENNY
FINE THREE PENNY
PATENT COPPER PLATED
CHANNEL
AMERICAN IRON SHOE
SWEDES IRON SHOE
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With New, Improved, and Patented Machinery, we shall now make

GLAZIERS' POINTS,

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Any variation from the regular size or shape of the above named goods made from samples to order.

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OFFICES AND FACTORIES. - - - - - - TAUNTON, MASS.

Warehouse and Salesroom at 78 Chambers Street, New York.

BUSINESS ITEMS.

MAINE.

It is reported that the Katahdin Iron Works furnace will start some time this week, with a stock of 150,000 bushels of coal and 3000 tons of roasted ore. Contracts will be made for 10,000 cords of wood for the company, at prices from ten to fifteen per cent. lower than last year.

NEW HAMPSHIRE.

A South Newmarket correspondent says that almost any day large pulleys and other castings are made by the Swamscott Machine Company that weigh 5000, 6000 and 7000 pounds.

MASSACHUSETTS.

James Hunter & Son, North Adams, have shut down work in their foundry and machine shop, keeping but two hands employed at present on repairs.

The works of the new Warner File Company, Holyoke, have been begun. They are to be located on the east side of Bigelow street, and the second site from Appleton street. The main building will be 122x30 feet, with an L 23 x33 feet, the walls to be about 12 feet high. The mill will contain a 4 foot and a 2½ foot turbine wheel, calculated to furnish 1½ mills power, so as to allow of an increase in future, if desirable. Eight file machines have been bought in Hartford, and it is intended to have them in place and running by the middle of next month.

It is reported that the owners of the Franconia Iron and Steel Works, Wareham, are soon to add to their present manufactory a department for the making of gas pipe.

The Griffin Machine Company, of Westfield, are making a Burwell & Bates friction clutch of 200 horse-power, for the Farr Alpaca Mill, at Holyoke. The clutch will admit of their running different sections of mill without running the whole. They are also making two smaller clutches for Hayden & Gere's brass works, at Haydenville.

The Whiting Manufacturing Company, North Attleboro, will remove its works to New York, January 1. This company employs 125 hands, who will probably remove with it to New York.

The *Commercial Bulletin* says that the Richmond Iron Works have started up the furnace at Van Deusenville. It has been idle sixteen months.

The Holyoke Steam Boiler Works will make the boiler for the Anchor tape mill, which is to be of 50 horse-power, and one of the same size for D. H. Hapgood, of Chester.

The bust of the drummer boy with the revolver in his hand, which is to be a figure in one of the Lincoln monument groups, is nearly completed at the Ames Works, Chicopee. The Boston *Journal of Commerce* says that it looks very well. A portion of the bronze department is being refloored in preparation to receive the plaster cast of Mr. Mosman's Bridgeport figures.

The Fitchburg Machine Company have been very busy for the last three months, working 100 men on orders. They have fitted up a new shop in Springfield, Ohio, and also made several large tools for C. H. Brown & Co. They have just shipped several pieces of machinery to the Howard Watch Company, Old Colony Steamboat Company, and to a prominent railroad in Pennsylvania.

The Pittsfield Tack Company, in their new quarters in the Kellogg steam-power building, are now running 20 machines, and expect soon to get their full complement of 30 at work. Their orders come in so fast that they have not yet been able to accumulate any goods. They can make about 300 kinds and sizes of tacks and small nails, and they will try to keep a stock of most of the kinds on hand to supply orders at once.

CONNECTICUT.

There are employed in the factories located in Hartford, or owned exclusively by Hartford parties, between 8000 and 10,000 women, boys and girls. The neighboring towns, Meriden, New Britain, Middletown, Waterbury and Southington Hall make very favorable reports as to the outlook for the winter trade.

NEW YORK.

The wages of the workmen in the Albany and Rensselaer Iron and Steel Company's works, Troy, have been again reduced, a step made necessary by the dullness of the iron trade, caused by the market being overstocked with manufactured material.

In Gloversville the glove trade has steadily increased, until the sales last year footed up some $5,000,000. There are 211 manufactories, and the hands actually employed in them amount to nearly 3000 persons; yet this does not include the whole number, for large quantities of work are taken from the manufactories, and glove making is carried on in almost every house.

NEW JERSEY.

The Wilson Iron Company manufacture blooms direct from the ore by a patent process in Split Rock township, Morris county. They have four Catalan forge fires, and one puddling or balling furnace, all operated on the Wilson process. The quality of the iron, so far as tested, is fully equal to charcoal run-out blooms for flanging plates. They expect to erect larger works next spring, and are negotiating for the erection of others in the Southwest.

The Boonton Iron Works are in operation, including the nail mills, and the town is ready to donate land to any one who will use it for manufacturing purposes.

PENNSYLVANIA.

The Bellaire Nail Works shipped 2000 kegs of nails to New Orleans on the 22d.

The Pottstown Iron Company's furnace, repaired and put in blast recently, is now working admirably.

Lemont Furnace, near Uniontown, Fayette county, will be completed in two or three weeks. The ore in stock is now being roasted.

It is stated that a stock company has been formed for the purpose of erecting a furnace stack at Royers' Ford, Montgomery county.

The work of erecting the new rolling mill of the Glasgow Iron Company, at Glasgow, in Pottsgrove township, Montgomery county, is progressing favorably. The frame work will be put up in a short time.

The Millerstown Furnace is to be restarted in the course of a few weeks. The establishment is undergoing repairs with that object in view. The new furnace of the East Penn Iron Company, at Lyons Station, will be put in blast on Monday next. The Kutztown Furnace is ready to go into blast, and is expected to start up in the course of a few weeks. The Topton Furnace will shortly resume operations. The starting up of the above furnaces will make the iron business lively along the East Pennsylvania Railroad. In view of a general furnace resumption, the ore mines of Longswamp and the eastern section of the county are being worked with an increased force of miners, and large quantities of ore are being delivered at the different stations along the railroad.

The Blair Iron and Steel Works, at Glenwood, owned by Foster, Struthers & Co., were sold by the sheriff, on Saturday, at the suit of Thomas S. Blair and wife. Mr. Wetmore was the purchaser.

Some 600 men are now employed in the iron ship yard of Cramp & Sons, on the Delaware.

Jacob's machine shop, in connection with the rolling mill, Brownsville, has opened up with an order for the machinery of a new stern wheel boat for the Monongahela Packet Company.

The iron ship works of the Reading Company, at Port Richmond, are all ready except the dry dock, and comprise a machine shop 497x124 feet; boiler shop, 220x60 feet; flanging shop, 90x30 feet; plate bending shop, 58x68 feet; molding and joiner shop, 310x60 feet, with draughtsman's room, 260x60 feet, and smith shop, 154x54 feet. All these buildings are of brick and iron, and stocked with the latest machinery. There are two wharves, each 100x400 feet, between which is a launching dock 250 feet wide, with ship ways 450 feet long at the end, admitting of building four vessels at once.

The Rock Hill Iron and Coal Company, at Orbisonia, will blow one of their new furnaces in in two or three weeks. These furnaces (two) are 17 feet at the bosses and 65 feet high. The engines have 90 inch blowing and 65 inch steam cylinders. One of the leading improvements in these furnaces is interchangeable power, gases, &c. This company mine their ores (hematite and fossil) from their mines within half a mile of the furnaces, running cars by gravity direct from the mines to stock house. Limestone is brought from quarries about four miles distant; the fuel is coke made by the Belgian ovens from the company's coal, mined at the terminus of the East Broad Top Railroad, 20 miles from the furnaces. About 450 tons of coal are shipped daily to the Eastern market in addition to what is required for use.

The Chemical Copper Company, Phœnixville, are about enlarging their works by the addition of a large building, in which will be erected a number of muffled furnaces, for reducing ores of a different quality than those now being reduced at their works. A large increase of production is expected.

The Schuylkill Copper Works, of Charles M. Wheatley, are turning out copper in larger quantities than ever before.

One hundred tons of first-class hematite iron ore are taken out daily from Bittenbender's mine, at Siesholtzville, in Hereford township. The ore is shipped from Red Lion Station, on the Catasauqua and Fogelsville Railroad to the furnaces in the Lehigh Valley. The lessor, Mr. Bittenbender, receives a royalty of fifty cents per ton—a daily income of $50. Over thirty thousand tons of ore are ready for shipment, while the daily cartage just reaches the amount of excavation. There are a number of other mines in operation in the vicinity of Siesholtzville, which is one of the richest iron ore districts in Pennsylvania. With increased railroad facilities the mines of Longswamp and Hereford townships can furnish sufficient ore for one hundred furnaces. Over half a million tons of ore are mined annually in Longswamp township, which does not include the Siesholtzville mines, although the latter are near the lines of Longswamp.—*Reading Times.*

MARYLAND.

Operations at Colonel Kunkel's iron furnaces at Catoctin, Frederick county, have been suspended. A large number of men have been thrown out of employment;

OHIO.

The Lake Shore Mill of the Cleveland Rolling Mill Company is running on iron rails for the Lake Shore Road.

At the Jefferson Iron Works, Steubenville, twenty furnaces have been operated double turn since the 1st inst., out of a total of twenty-two.

The Standard Iron Company are running their mill double turn, turning out twelve tons of sheet iron per day. Their sheet iron is made entirely from charcoal blooms, and most of it goes into the market in the shape of galvanized iron.

Bolton, Myers & Co.'s steel mills are running day and night now, and still they find it difficult to fill their orders.—*Canton Democrat.*

The new Ætna Furnace, Ironton, is making 70 tons of silver gray iron every day now. This furnace is 18x90, and has the Ferrie coking apparatus.

The old mill of the Enterprise Iron Works has been idle for the last three weeks. Suspended for new boilers. The new mill is running as usual.

The three blast furnaces of the Briar Hill Iron and Coal Company are shut down. The Eagle furnace is in blast and making the usual cast of about twenty-five tons daily.

The Youngstown Rolling Mill Company are building a seven-inch mill in addition to their large rolling mill. The new addition is 36x100 feet, the building for which is already erected. Workmen are now digging the foundations for the heating furnace, and will commence the foundation for a steam engine in a few days. They expect to run the mill by the first of January.—*Youngstown Commercial.*

The rumor has been quite general of late that the Cambria Iron Company contemplate building a wire and bolt works in Johnstown, but there appears to be no grounds for the report. —*Tribune.*

The Niles *Independent* says that the committee appointed to receive subscriptions to the proposed loan to James Ward, for the purpose of putting in operation the works known as the Old Mill, report that they have secured the full amount required, $10,000. Unless some unlooked-for difficulty intervenes, we may see steps taken to start the works speedily.

A stock company is being formed in Ashland, to purchase the shops of the Ashland Machine Company, and start the works up as early as possible.

An effort is being made to establish a nail and rolling mill at New Philadelphia. Some capitalists from Niles are engaged in it.

ILLINOIS.

In a running time of 17 hours and 40 minutes, the Joliet Steel Mills recently turned out 1214 fifty-two pound steel rails, each 30 feet in length, making a total of 63,128 pounds of rails. The actual working time of the night turn was 8 hours and 55 minutes, and of the day turn 8 hours and 45 minutes. The remainder of the time, 5 hours and 25 minutes, was lost in heating, which was done in seven furnaces, four of them gas, and three coal furnaces, with a 23-inch train of 15-inch pass rolls. This loss of time was occasioned by the fact that the capacity of the furnaces was not sufficient to supply the rolls.

MISSOURI.

Work upon the Bessemer mill at the Vulcan Iron Works, at South St. Louis, is now carried on night and day, and it is the intention of the company to have the works in operation by the last of March. The new Bessemer plant in that industry, now approaching completion, is building from plans furnished by Mr. A. L. Holley.

Joe Wangler & Co., St. Louis, are making the boilers for the Grand Tower Mining Company's new towboat. They are two in number, each 26 feet long by 38 inches in diameter, with double riveted seams and two 12-inch flues.

P. J. Pauly, corner Main and Carr streets, St. Louis, has well under way an eight cell iron jail for Mt. Vernon, Jefferson County, Illinois. Also a new six cell, hardened steel jail for Galesville, Texas, with P. J. Pauly's patent lever locks.

John O'Brien & Bro., of the Missouri Boiler and Sheet Iron Works, St. Louis, are building two cupola shells for the Vulcan Bessemer Steel Works, and are 60 inches each in diameter, with lengths of 35 feet. A handsome boiler, under hand, turns out to be for the new saw mill at Bloomfield, Mo., 30 feet long by 46 inches in diameter, with six 10-inch flues. These gentlemen have also under contract and construction a boiler for the Insurance Exchange, one for Wm. Barr & Co., and another for the St. Louis Galvanizing Works. All three boilers are vertical tubulars.

The No. 2 furnace of the South St. Louis Iron Company is steadily running with a daily average of metal of 45 to 48 tons.

The Martindale Zinc Company, when running its eight furnaces, employs 125 hands, with a yield of eight tons spelter daily. But five furnaces are running at present. Three varieties of zinc ore are worked by this concern—sulphuret and carbonate from Dade county, Valley Mining Company's washed carbonate, and Granby silicate.

Trade Report.

OFFICE OF THE IRON AGE,
WEDNESDAY EVENING, Dec. 1, 1875.

During the past week the financial markets have been agitated by rumors of impending war with Spain, which, like most stock jobbing canards, seem to have had very little foundation in fact. It served the purposes of the bulls in the gold market, however, advancing the premium 1⅝ per cent. From present information it is safe to assume that there has been no recent interruption of the amicable relations existing between this country and Spain. The recent naval preparations seem to have had no excuse, for Spain is carrying out, in apparent good faith, the provisions of the Virginius protocol, and there is no probability that the President will recommend, or Congress favor, the recognition of the republican movement in Cuba. For the present, therefore, we may possess our souls in peace, without fear of foreign complications. The only really important event of the week has been the decision against the government by the Supreme Court of the case of the Union Pacific Railroad. The decision affirms the judgment of the Court of Claims, that the Union Pacific Railroad Company are not bound to pay interest on the bonds issued them by the government until the principal shall become due—thirty years from the date. This decision will shock the public sense, however closely it may tally with the letter of the law. That bonds bearing interest should run for thirty years without the interest becoming due upon them is an unheard of thing, and not in accordance with the intent of Congress; and if this be the law, it is evident that the lobby having the measure in charge was most successful in taking advantage of Congress by a wording of the bill which obligates the government beyond what it agreed to assume. By the time the bonds are due it will probably be found that the Treasury has no claim upon the company for reimbursement. These are unexpected developments which, in connection with the burning shame of the Credit Mobilier bribery, should be borne in mind during the coming session of Congress, when aid will be asked for another road to the Pacific.

During the week the money market has become somewhat firmer—the rate on call loans having advanced from 2 @ 3 per cent. to 4 @ 5 per cent. Prime mercantile paper is quoted at 4½ @ 8 per cent., with 6 @ 7 as the ruling rate.

During the past week cash gold has been in better supply than for some time past, and borrowers have found no difficulty in getting all they wanted, while holders have had to pay for currency advanced on it. Washington advices state that the Treasury will not sell any coin during December, as the market is now well supplied, and large interest payments must be made during the month. It is further rumored that the Treasury sales will not be resumed, "unless something extraordinary happens." It is scarcely probable that this rumor is founded on fact. The Secretary of the Treasury must, of course, accumulate coin, in pursuance of the plan of specie resumption, which it is understood he is determined to carry out, so long as the law stands in its present form, but if he should begin this by stopping all sales, and locking up in the Treasury all the coin receipts not needed to pay interest, we should have a serious and protracted disturbance in the gold market. The coin receipts of the government, on account of customs, amount to about $160,000,000 in customs duties. Of this amount $95,000,000 are disbursed in interest payments, and the sinking fund, which the Secretary proposes, would probably absorb $30,000,000 more, leaving $35,000,000 to be sold or hoarded. If the latter, the government will not only accumulate a great deal more coin than is needed for purposes of resumption, but the market will be drained of gold, and merchants and others having use for coin would be at the mercy of speculators. If Mr. Bristow proposes any such plan as this he will probably modify his views when experience shall show him the mischief which must certainly result from carrying them out. The following table shows the daily range of the premiumm during the past week:

	Highest.	Lowest.
Thursday	—	—
Friday	114⅛	114⅛
Saturday	114⅛	114⅛
Monday	114⅜	114⅜
Tuesday	115⅛	114⅝
Wednesday	115⅛	115

Government bonds have remained steady and strong. Railway mortgages, especially those of the Central and Union Pacific, were strong and in good demand. We give below the closing quotations of governments.

The stock market became active and strong during the week, with principal dealings in Lake Shore, Union Pacific, Pacific Mail, Western Union, Michigan Central, St. Paul and Northwest. We give below the quotations of active shares at the close of business to-day.

The following tables show the week's movements in foreign trade:

IMPORTS.

	1873.	1874.	1875.
Total for week	$3,889,081	$6,198,752	$2,983,749
Prev. reported	355,476,921	353,430,040	294,013,357
Since Jan. 1	$359,366,002	$359,628,792	$296,997,106

Among the imports of general merchandise were articles valued as follows:

	Quant.	Value.
Anvils	71	$677
Bronzes	6	1,305
Chains and anchors	97	3,830
Cutlery	38	15,349
Guns	20	4,861
Hardware	10	1,751
Iron, sheet, tons	579	102,745
Iron, cotton ties	330	911
Iron, other, tons	33	2,419
Metal goods	61	9,732
Needles	26	6,283
Old metal	—	77
Platina	2	7,228
Per. caps	15	3,147
Steel	602	5,687
Silverware	1	407
Tin, boxes	6,067	44,578
Tin, 420 slabs	23,125	4,312
Wire	488	5,508
Zinc	108,550	6,920

EXPORTS OF SPECIE.

Total for the week	$107,110
Previously reported	11,344,124
Total since January 1, 1875	$11,451,234
Same time in 1874	5,619,794
Same time in 1873	17,328,927
Same time in 1872	5,461,914

The bank statement shows less important changes than for several weeks. The total reserve is down $397,900, the gain in specie having been that much overcome by the loss in legal tender notes. The surplus reserve of the banks is now $9,349,300, which is $317,050 less than last week. The following shows the bank averages for the past two weeks:

	Nov. 20.	Nov. 27.	Differences.
Loans	$272,697,400	$271,910,200	Dec. $787,200
Specie	15,712,000	16,262,500	Inc. 550,500
Legal tend's	47,987,300	47,038,900	Dec. 948,400
Deposits	216,131,800	215,808,400	Dec. 323,400
Circulation	18,449,409	18,512,109	Inc. 62,700

Government bonds at the close were steady at the following quotations:

	Bid.	Asked.
*U. S. Currency 6's	122	122½
*U. S. 6s 1881, reg.	119⅛	119½
U. S. 6s. 1881, cou.	123¾	123⅞
U. S. 5-20 1864, reg. (Called)	115⅜	—
U. S. 5-20 1864, cou. (Called)	115⅜	—
U. S. 5-20 1865, reg.	116¼	—
U. S. 5-20 1865, con.	116½	—
U. S. 5-20 1865, new	117	117¼
U. S. 5-20 1865, con.	120⅛	120⅝
U. S. 5-20 1867, reg.	119	119¼
U. S. 5-20 1867, cou.	122¾	122⅞
U. S. 5-20 1868, reg.	119	119⅛
U. S. 5-20 1868, con.	122¾	—
U. S. 10-40 reg.	117¾	118
U. S. 10-40 con.	117¾	118
U. S. 5s, 1881, reg.	116¾	116⅞
U. S. 5s, 1881, con.	117¾	117⅞
Central Pac. Gold Bonds	106¾	107

* Ex interest.

The closing quotations of stocks were as follows:

	Bid.	Asked.
Atlantic & Pacific Preferred	4	4½
Atlantic and Pacific Telegraph	18⅛	19
Chicago & Northwestern	38⅛	38½
" " Pref.	53⅛	53½
Chicago, Rock Island and Pacific	105	105½
Col., Chic. & Ind. Cent.	4	4⅜
Clev., Col., Cin. & Ind's	56	58
Cleveland and Pittsburgh	90	90⅜
Chicago & Alton	97	97½
" " Pref.	105	106
Consolidation Coal	45½	47
Canton	36	43
Del. Lack. and Western	119⅜	119¾
Delaware & Hudson Canal	123	123½
Adams Express	102	103
American Express	60	60½
United States Express	50	53
Wells, Fargo & Co. Express	82	83½
Erie	15⅜	15⅝
Harlem	132½	133½
Hannibal & St. Joseph	21⅜	22
" " Pref.	27½	28
Illinois Central	94	95
Kansas Pacific	15½	15⅞
Kansas & Texas	7⅞	8¼
Lake Shore	58¼	58⅜
Michigan Central	58	58¼
Morris & Essex	103¼	103¾
Milwaukee & St. Paul	35⅞	35⅝
" Pref.	65⅛	65⅝
Mariposa	7¾	8
" Pref.	7¾	8
N. Y., N. H. and Hartford	146	—
New York Central	104⅝	105
New Jersey Central	104⅛	104¾
New Jersey Southern	—	—
Ohio & Mississippi	17⅜	17⅝
Pacific Mail	41¼	41⅜
Panama	126½	127½
Pittsburgh & Fort Wayne	98	99
Pacific of Missouri	12¾	13⅛
Quicksilver	17	17¾
" Pref.	22½	23½
St. Louis, Kan. City North'n	5	6¼
St. Louis, Kan. City North'n Pref.	25¾	27
Tol., Wabash & Western	5⅛	5⅝
Union Pacific	80	80¾
Western Union Telegraph (ex'd)	74⅞	75

GENERAL HARDWARE.

Trade, considering the lateness of the season, is as brisk as can be reasonably expected, and in seasonable goods, such as Skates, Sleigh Bells, Snow Shovels, &c., considerable activity prevails. The changes in values which have occurred since our last will be found below.

There is no improvement to notice in the demand for Foreign Hardware, and prices, with few exceptions, are firm and unchanged.

We hear of an improved demand for Nails, which is accounted for partly by the very low figures prevailing and the sudden change in the weather, which promises an earlier closing of navigation than had been expected. We continue our quotation of $3 @ $3·10, net, per keg, for 10d. There are some brands of Nails in this market which can be bought at a trifle under these figures.

The expected reduction in the price of Wood Screws has been announced to day, as will be seen by the following circulars:

CIRCULAR No 4.

PROVIDENCE, December 1st, 1875.

GENTLEMEN: Until further advised our discount and terms will be as follows:

WOOD SCREWS.

Flat Head Iron	discount from list, 40%
Flat Head Brass	" " 40%
Round Head Iron	" " 30%
Round Head Brass	" " 30%

TERMS: Cash within 30 days from date of invoice.

Payments in funds at par in Boston, New York, Philadelphia or Baltimore.

Being prepared to furnish promptly a full assortment of Machine Screws, Rivets, Stove Bolts, Tire Bolts and Coach Screws, in addition to our Gimlet Pointed Wood Screws, we would solicit orders for them also.

AMERICAN SCREW CO.

Office of RUSSELL & ERWIN MANF'G CO., 45 AND 47 CHAMBERS STREET, NEW YORK, Dec. 1, 1875.

On and after this date, until further notice, our discounts on Wood Screws will be as follows:

Flat Head Iron	dis 40 %
Flat Head Brass	dis 40 %
Round Head Iron	dis 30 %
Round Head Brass	dis 30 %

RUSSELL & ERWIN MFG. CO.

Office of ALFRED FIELD & CO., 93 CHAMBERS AND 75 READE STREETS, NEW YORK, December 1st, 1875.

DEAR SIRS: We beg to inform you that on and after this date our price for Wood Screws will be as follows, viz:

On Flat Head Iron	dis 40&2½ %
On Flat Head Brass	dis 40&7½ %

Soliciting your valued orders, yours, truly,
ALFRED FIELD & CO.

The Massachusetts Screw Co., J. Clark Wilson & Co. agents, quote Flat Head Iron Wood Screws discount 40 per cent.

The Union Steel Screw Co. also announce that their prices will be the same as those of the American Screw Co., published this day, and their terms will be always as favorable. A Field & Sons, No. 78 Chambers street, are their agents in this city.

The manufacturers of Iron Wire have this day revised their discounts as follows:

Bright and Annealed	Nos. 0 @ 18 dis 45 @ 50 %
" "	" 19 @ 36 dis 50 @ 55 %
" "	" 37 @ 36 dis 55 @ 60 %
Coppered	0 @ 18 dis 40 @ 45 %
Galvanized, Nos. 0 to 9	₩ ℔ 8c @ 8½c net
Galvanized, Nos. 10 to 18	market list dis 15 @ 20 %
Tinned Wire	dis 25 @ 30 %
Cast Steel	dis 15 @ 20 %
Tinned Broom Wire	dis 35 @ 40 %
Galvanized Telegraph, Nos. 8 and 9	₩ ℔ 9c net
" " "	10 and 11 ₩ ℔ 10c net
" " "	12 ₩ ℔ 10½c net
Annealed Fence, Nos. 8 and 9	dis 50 %
" Grape, " 10 to 14	dis 50 %

These discounts show a slight decline from former quotations.

The D. K. Miller Lock Co., Philadelphia, quote their Pad Locks at discount 30 and 10 per cent., instead of discount 30 per cent., as formerly.

The Russell & Erwin Mfg. Co. are getting in a stock of Winsted Toe Calks, which they will sell at manufacturers' prices. They quote Bonney's and Stearns' Hollow Augers and Spoke Shaves at discount 25 and 10 per cent., formerly discount 25 per cent.

The Lamson & Goodnow Mfg. Co., No. 88 Chambers street, have issued the following list for Scythe Snaths, which is subject to discount 20 per cent. For large orders, and to the jobbing trade, an extra discount is allowed. These goods, we are informed, are carefully made, and are fully equal, both in quality and finish, to any similar goods in the market.

Patent Sythe Snaths.

	Per doz.
No. 0, Improved, Bronze Ferule, Hook Bolt Fastening	$10·00
No. 10, Bronze Ferule, Loop Bolt Fastening	10·00
No. 10½, Black Trimmed, Loop Bolt Fastening. Ring Sythe Snaths.	9·50
No. 1, Extra, Bronze Ferule, with Plate	9·00
No. 2, Extra, Black Trimmed. "	8·25
No. 1, Bronze Ferule, Slide Socket	8·50
No. 2, Black Trimmed, Socket	7·50
No. 3, " " "	6·00
C. S. " " "	6·00
Philadelphia Pattern, Short, C. S. Red	6·00
No. 1, Bush Snaths, 2 Rings	9·00
No. 1, Extra Snaths, 2 Rings, with Plate. Mulay, Dutch and Jersey Bend Snaths.	10·00
No. 10, Bronze Ferule, Loop Bolt Fastening	11·00
No. 10½, Black Trimmed, Loop Bolt Fastening.	10·50
No. 1, Extra, Bronze Ferule, with Plate	10·00
No. 1, Bronze Ferule, Slide Socket	9·50
No. 2, Black Trimmed	8·50

J. Clark Wilson & Co. have in Stock the following numbers of Veazey & White's Sleigh Bells, which they offer to the trade at discount 25 per cent. from the manufacturers' list, which is given below.

BODY STRAPS.

Polished Bells—One Row.

No. 33, 36 No. 1 Round Bells	$1·80
No. 35, 30 No. 2 " "	1·95
No. 37, 30 No. 3 " "	2·25
No. 38, 24 No. 3 " "	2·00

NECK STRAPS.

With Polished Bells.

No. 58, 15 No. 0 Round Bells	$0·63
No. 60, 15 No. 1 " "	·65
No. 62, 18 No. 2 " "	·95
No. 64, 12 No. 2 " "	·80

NECK STRAPS.

With Open Bells, Polished.

No. 102, 12 No. 00, Open Bells	$0·70
No. 103, 15 No. 0, "	·90
No. 105, 12 No. 1, "	1·00
No. 107, 10 No. 2, "	·98

MARTINGALE STRAPS.

Rough or Polished, Lined, Wire Fastened.

No. 180, 11 Bells, 4 to 9, Assorted Large	$1·40
No. 182, 11 " 6 to 11, " "	1·88
No. 184, 13 " 3 to 9, " "	1·50
No. 190, 15 " 4 to 11, " "	2·06

CHASE'S PATENT SLEIGH BELLS—NECK STRAPS.

Common Tinned or Polished Bells, Extra Size and Quality.

No. 400, 9 Bells, 1 to 5, Assorted	$1·10
No. 402, 13 " 1 to 7, "	1·50
No. 404, 11 " 4 to 9, "	1·80
No. 410, 15 " 3 to 10, "	2·20

Walsh, Coulter & Flagler, agents for Maynard Miller, have rearranged their patterns of Hand Sleds, and introduced a new size of Snow Shovel, which, they inform us, is meeting with favor. Their list of prices is as follows:

Hand Sleds,

No.	1	2	3	4
Per doz	$18·00	18·00	22·00	27·00

Snow Shovels,

	D H'dle.	Long H'dle.	Boys.
Per doz	$9·00	7·50	6·00

Discount 33⅓ %

Sargent & Co. have issued the following Hardware Bulletin, showing the changes that have been made in prices since their pamphlet of discounts of August 16th was issued. All of the goods quoted below are subject to an extra discount of 10 per cent. for prompt cash. They have also issued some new pages containing lists of goods recently added to their assortment. These pages are properly numbered, and gummed for fastening in their catalogue of 1874, and they urge upon their customers the necessity of pasting them in their book immediately. The discounts from the goods referred to in the new pages will be found below:

SARGENT'S HARDWARE BULLETIN.

NEW YORK, November, 1875.

The following changes in prices have been made since our pamphlet of discounts of August 16 was issued:

Page in Catalogue.		Discount per cent.
B,	Galvanized Strap and T Hinges	45
B,	" Hinge Hasps, Change list: Inch, 3 4½ 6 8 10 $5·80 6·70 8·00 10·50 13·00	45
C,	" Rolled Blind Hinges	65
C,	" " " Plate Hinges	65&10
D,	" Hasps & Staples, Nos. 22 to 37	70&10
F,	" Hitching Rings	70&10
F,	" Washers, 3-16x1¼ to 7-16x15-16	70&5
F,	" " ⅛x1½ to ⅞x2	75
222,	Por. Drawer Knobs, No. 5 (no change)	50&10
222,	" " " No. 7	50
223,	No. 8, Por. Stove Knobs	50
285,	Japanned Screws	55&7½
328,	Stebbins' Gates, Nos. 1 to 4	62½
329,	" " Nos. 51 to 54	62½
386,	Deep Socket Casters	33⅓
599,	Parker's Blind Hinges	65
599,	Seymour's " "	57½
600,	Clark's " " Nos. 1 and 3	65
	" " " Nos. 2 to 6	40
	" " " No. 20	70
602,	Van Sand's Blind Fasts, No. 2000	5
602,	" " " " No. 3705	16⅔
602,	Washburn's Blind Fasts	5
604,	Judd's Axle Pulleys	33⅓
611,	Iron Rivets	50
612,	Iron Screws. New list, Sept. 1st, '75— Flat Head	22½
	Round Head	11
613,	Brass Screws, New list, Sept. 1st, '75— Flat Head	22½
	Round Head	11
615 to 619,	Maydole's Hammers	2½
622,	Sargent's Adzes and Broad Axes	16⅔
623,	" Bench Axes and Mattocks	16⅔
624-625,	Sargent's Hatchets, etc	22½
626,	Ladd's Shingling Hatchets	45&5
	Other Ladd's Hatchets on this page	40
626¾,	Hunt's Hatchets, etc	10
628¾,	Am. File Co.'s Files, Advance the list of Half Round Shoe Rasps 1 inch	12
629,	Coes' Genuine Wrenches	40
657 to 661,	Measuring Tapes	12
662,	Pocket Tapes, Ass Skin Case	12
662,	" Spring Case	25
663 to 666,	Boxwood Rules	60
666-667,	Ivory Rules	50
667,	Calliper Rules, Boxwood	60
668,	" " Ivory	50
668,	Boxwood Rules	60
669,	Ship Carpenter's Bevels	60
	All other Miscellaneous Rules	50
693,	Wood Saw Frames, Change list of the White Frames to $1·40	10
696,	No. 8, Base Knobs, Wilmot's	45
696,	No. 10, " (Birch and Bl'k Wal't only)	50
697,	Awls and Tools, Nos. 42, 43	45
699,	Awls, Change list of Sewing to $3·25	25
701,	No. 10, Spring Punches	30
702,	Rivet Sets	net
705,	Saw Filers' Vise	16⅔
724,	Tea Scales	22½
725,	Platform Scales, Reduce list of No. 44 to $7	33⅓
732,	Scale Beams	33⅓
734,	Fry Pans	45
752,	Glass Curtain Pins, New list as per slip sent with this Bulletin	6
754,	Torrey's Door Springs, $2·75 per doz	net
754,	Stair Rods	33⅓
758,	Dog Collars	33⅓
762,	Washita Stone and Slips, Change list as follows: Extra per lb., $0·39	net
	No. 1 " ·33½	net
	No. 2 " ·27½	net
	No. 1, R'd Edge Slips " ·67	net
	No. 1, Sq. " " " ·67	net
762,	Arkansas Stone and Slips, Change list as follows: No. 1 per lb., $1·50	net
	No. 2 " 1·00	net
	No. 1, R'd Edge Slips " 2·77	net
763,	Mounted Stone	add 10
768,	Blacksmiths' Bellows, New list as follows	10

Inch	20	22	24	26
Each	$8·50	8·50	9·00	10·00
Inch	28	30	32	34
Each	$11·00	12·00	14·00	16·00
Inch	36	38	40	42
Each	$18·00	20·00	23·00	27·00
Inch	44	46	48	50
Each	$32·00	Not made in com'n bellows.		

776, Racking Cocks	30
777, Globe Cocks	30
778, Plain Lever Bibbs	30
794½, Perfect Curry Combs	20
795 to 799, Hotchkiss' Curry Combs	35
814, Scandinavian Pad'locks	33⅓

Please change No. 530 Sash Fasteners, on page 212½, to No. 520.

DISCOUNTS FROM GOODS ADVERTISED ON NEW PAGES.

Page.		Dis. per cent.
30½,	Berlin Bronzed Bolts, No. 472	60&10
70¾,	Closet Catches	60&10
154½,	Drop Handles	60
154½,	Escutcheons	60
198¾,	Bright Wire and Brass Screw Hooks	65&10
198½,	" " " S Hooks	60
198½,	" " Bird Cage Eyes	60
198¾,	No. 1040, Brass Gate Hooks and Eyes	65&10
198¾,	Brass Wire Screw Eyes and Hooks	65&10
216¾,	Window Pulls	60
218¾,	Sash Lifts	60&10
254¾,	Shelf Brackets	60
0286½,	Brass Parliament Butts	net
0286½,	No. 476, Berlin Bronzed Butts	50&10
300¼,	Bar Meat Hooks	70
564¾,	Scandinavian Padlocks	33⅓
564¾,	Barnes & Dietz Padlocks	16⅔
564½,	" " Drawer Lock	16⅔
564½,	Pat. Roller Sheaves	16⅔
646½,	Bee Gimlets	25
700½,	Leach's Pat. Spring Punches	6
708½,	Sprague Can Openers	55
710¼,	Geneva Hand Finters	net
734½,	Universal Family Scales	16⅔
752,	Glass Curtain Pins (List as per slip)	6
766½,	Galvanized Clothes Line Wire	net
768¾,	New England Flint Paper	6
768¾,	Sargent & Co.'s Carpenters' Pencils	25
768¾,	Dixon's Lead Pencils	net
770½,	Blake's Belt Studs, Punches and Awls	12

Add to page 223½.

No. 135,	Reversible Shutter Bars, same pattern as No. 134, Berlin Bronzed, packed with Screws. 2-inch, per doz	$1·80
	2½-inch, "	1·90

Discount 60 and 10 per cent.

December 1, 1875.

REDUCTION IN PRICE OF SCREWS.

Page.		Discount per cent.
612,	Iron Screws, New list, Sept. 1, '75— Flat Head	33⅓
	Round Head	22½
613,	Brass Screws, New list, Sept. 1, '75— Flat Head	33⅓
	Round Head	22½

REDUCTION IN PRICE OF AIKEN'S GOODS.

Page.		Discount per cent.
696¾,	Aiken's Awls and Tools, Change list as follows: Twenty Tools, $13·88; Ten Tools, $12·50	33⅓
	By the case (6 dozen)	40
	Extra Brad Awls, $4·62 per gross	40
	Extra Tools, $5·55 per gross	40
705,	Hammer Saw Sets, Aiken's, Change list to $14·80	33⅓
	By the case (6 dozen)	40

Graham & Haines have received a complete new line of samples of Blood's Axes, Hatchets and Scythes. This line of samples, for finish and style, is, to our thinking, as handsome as it is possible to be. We are informed that the demand for these goods during the late fall season was greater than ever before.

The firm of Keith & Kelso, of Baltimore, Md., was dissolved this day by mutual consent. Edward M. Keith has taken the warehouse No. 25 South Charles street, where he will conduct a general Hardware commission business, and John R. Kelso, Jr., will continue the Hardware commission business at their old stand, No. 23 South Charles street.

Horace Durrie & Co. inform us that they have in stock a full assortment of Perkins Horse, Mule and Snow Shoes.

BRITISH IRON MARKET.

(*Specially reported by cable for The Iron Age.*)

WEDNESDAY, Dec. 1, 1875.

Scotch Pig.—Since last Wednesday prices have fluctuated in both directions, but the market is now strong, and there is a good business doing. The following are makers' quotations:

Gartsherrie No. 1	73/
Coltness No. 1	77/6
Glengarnock No. 1	69/
Eglinton No. 1	63/6

Manufactured Iron.—There is a fair business doing, and prices are firm. Best Staffordshire Bars are quoted at £10.

Rails.—There is very little doing, and quotations are nominally £6 @ £6. 10/, for Welsh.

IRON.

American Pig.—The market is in a position very difficult to report. The nominal quotation of standard brands is unchanged, but the market is unsettled by sales and rumors of sales of outside brands, or of lots in second hands, at lower prices. 500 tons Allentown No. 1 Foundry are reported sold at a private price, but known to be less than $24 235 tons Mottled, White and Forge, at Peekskill, have been sold at $15·50. This is, we believe, the lowest sale yet reported, and the price is said to be about $6 less than the cost of production. We find a rumor from Philadelphia, which we are unable to authenticate, of considerable sales of No. 1 Foundry by the Crane Co. at $24. We still continue our quotation of $24 for Foundry No. 1; $22 for Foundry No. 2, and $20 @ $21 for Gray Forge.

Scotch Pig.—Since our last we notice the sale of 100 tons Coltness at about $30; 100 tons Glengarnock on private terms, and 50 tons at $31; 150 tons Eglinton at $29·50, and 100 tons Carnbroe on private terms. The imports have been less than the sales.

Rails.—We hear of nothing to report. Prices remain $45 @ $50 at mill for American Iron, and $68 @ $70 at mill for Steel.

Old Rails.—We hear of no sale since that reported in our last at $22·50. We quote nominally, in the absence of transactions, $22·50 @ $25.

Scrap.—In the Scrap market we hear of no transactions of moment, buyers and sellers seeming equally indifferent. We quote, $30 @ $31.

METALS.

Copper.—The early cold weather and accounts from the Lake Superior region have stiffened the market very considerably, after a sale of 500,000 pounds Lake Copper, in lots, on the spot, at 23¾c. @ 23½c. Below 23½c. it would be difficult now to find any Copper. Baltimore is quiet at 23½c. The burning of the Albany and Boston stamping mill, in the Lake region, which crushed all the ore of the Osceola mine, some 125,000 pounds per month, cuts off that much of the winter supply, the Osceola being one out of four mines which were able to ship overland. It will probably take some five months ere supply from that mine will reopen. This circumstance, combined with the firm control under which Copper during the winter season will be kept by the present holders, insures a pretty strong market in the immediate future, even assuming that the demand from manufacturers remains as moderate as it is at present. Some holders seem of opinion that the price of Lake Copper might be raised to 24c., and kept there under this changed aspect. All depends on the actual supply in the shape of available Copper and secured futures, which the manufacturers have made sure of. If, as some assert, they are, on the whole, but lightly stocked, and the demand for their goods should revive, the predicted surplus of a couple of million pounds would barely suffice to carry them through the winter months, and the metal would in such an event be capable of developing considerable strength. On Saturday the official cable dispatch from London came to hand, quoting Best Selected £88, and Chili Bars, as heretofore, £81. 10/, the former having declined £1. The manufactures of Copper are unaltered as follows: New Sheathing, 30c.; Bolts and Braziers, 31c.; Nails, 38c. @ 39c.; Bronze and Yellow Metal Sheathing, 21c.; Yellow Metal Bolts, 28c.; and ditto Nails, 21c., net, cash.

Tin.—Arrivals from the Straits have been large, being the bulk of the quantity about due, but as the Tin came pretty nearly all into one strong hand, this influx has no perceptible effect on our market, which remains as strong as ever, despite the constantly recurring weakness manifested at London, where, from £82, Straits receded to £82 to-day, while Singapore simultaneously from $23 advanced to $23·25. According to the "Associated Press" dispatches the English do not expect much resistance at the hands of the Perak natives as soon as the troops from India proper shall have joined those of the garrison and from Hong-Kong on the spot. At the Dutch sale of 23,000 slabs, which came off yesterday, the state of affairs in the Peninsula of Malacca seems to have been interpreted in the same sense, and Banca, which from 50½ had recovered to 53 guilders on the strength of the revolt, receded at the auction to 50½, which is equal to £86 at London, a very low figure for Banca Tin. But people who have had confidence in Tin for the past three months, based the same on the English and Australian deficiencies, and are not disturbed by the sort of fizzle which seems to be connected with this Malay rebellion. And as regards our own market they consider it sound upon its own merits. We have been inactive, but quite firm here all along at 19¾c., gold, plump, for Straits. We quote, in gold, large lots, English Refined, 19½c. @ 19¾c.; do. Common, 19⅛c. @ 19¼c., and Banca, 23½c Our market closes with such a firm undertone that but the slightest encouragement would be required from London, and we should in all likelihood advance on our own intrinsic strength. Tin Plates have remained exceedingly dull at the following gold quotations per box, ordinary brands, in lines: Charcoal Bright, $7·25 @ $7·50; do. Ternes, $6·87½ @ $7; Coke Tin, $6·50, and do. Ternes, $6·25. In England the market remains strong; cable quotation for Coke Tin to-day 22/.

Lead.—Pretty much all that was afloat has now been disposed of, of ordinary Lead, and with a fair consumptive demand the market retains its strength, without any new features turning up during the week. Sales have been limited to 100 tons in lots at 5·95c., gold, for Domestic. A lot of 100 tons Spanish, to hand, was sold afloat a long time ago. Our market closes quiet, but firm, at 5·95c. @ 6c., gold, for ordinary Domestic. Foreign is nominal, owing to the unsettled state of the European market, where bottom, however, seems to have been touched. A late letter from St. Louis expresses itself to the following effect: "Stocks are light; in Soft Lead there are always orders

ahead for the past two months, keeping our market bare here. For ordinary Lead orders have been adequate to the amount produced." The latest quotation at that center for Soft Lead is 7c., currency, firm. Manufactures of Lead have not been changed in price, except Pipe, which from 8¾c. is raised to 9c.

Spelter.—There is a rumor to-day that there is trouble in the combination camp on account of an alleged non-compliance with the existing agreement, by one or more of the parties to it; the opinion is therefore expressed that the whole compact will prove abortive. The fact of it is that these combinations may serve a purpose when there is a tolerably steady demand for an article, but when trade in it is sluggish, there are always some financially weak parties apt to break through the rules from sheer necessity. We quote Domestic nominally 7¼c. @ 7·40c., currency, with little or nothing transpiring in it. Foreign has, for the moment, relapsed into quietude at 7·15c. @ 7·40c., gold. If Europe showed any weakness, limits would have been reduced by cable, but this not having been the case, it shows that there is no wavering there. Sheet Zinc is apathetic at 9c., gold.

Antimony.—According to telegraphic accounts from London, a combination advance from £59 to £62 seems to be impending. We are quiet, but firm, here at 14c. @ 14½c., gold.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending Nov. 30, 1875:

Hardware.

Boker Hermann & Co.
Chains, cks., 30
Per. caps, cs., 4
Mdse. pkgs., 2
Blume & Co.
Wire rope, coils, 2
Cohn & Hecker.
Iron ware, pkgs., 6
Field A. & Co.
Cases, 9
Friedmann & Lauterjung.
Mdse. pkgs., 3
Lau & Garlichs.
Mdse. pkgs., 1
Moller A. & Co.
Anvils, 1
Moore's J. P. Sons.
Gun caps, cs., 22
Phelps, Dodge & Co.
Iron ladles, cks., 2
Schoverling & Daly.
Mdse. pkgs., 9
Sulzbacher & Heyman.
Wire, bdls., 696
Van Wart & McCoy.
Mdse. pkgs., 9
Wiebusch & Hilger Mfg. Co.
Mdse. pkgs., 3
Woodford W. O.
Grindstones, 20
Order.
Casks, 8
Files, pkgs., 3
Cases, 7
Grindstones, 260
Casks, 3

Iron.

Egleston Bros.
Bars, bdls., 271
Foulkes Jos. & Sons.
Scrap, tons, 4
Scrap, bbls., 2
Henery & Parker.
Pig, tons, 100
Hope Adam.
Bundles, 204
Marvel Wm. D.
Ore, tons, 380
Mitander Nils.
Bars, 1251
Wire gauze, coils, 628
Naylor & Co.
Bars, 24,447
Bundles, 14
Phelps, Dodge & Co.
Sheet, bdls., 257
Robbins C. & Sons.
Boxes, 60
Schmeisser & Bender.
Spiegel, tons, 140
Wheeler E. S. & Co.
Pig, tons, 100
Order.
Bars, 4786
Russian bars, 20
Pig, tons, 500

Steel.

Abbott & Howard.
Packages, 40

Hogan John.
Cases, 18
Wire, cs., 6
Jacobs, Strouse & Co.
Sheet, cks., 11
Lang W. Bailey & Co.
Plates, 6
Bundles, 11
Naylor & Co.
Bars, cs., 50
Cast, bars, 30
Cast steel built up frog, 1
Cast steel frog points, 1
Bars, 6011
Prosser Thos. & Sons.
Tire forgings, 38
Cases, 27
Bundles, 45
Piersons & Co.
Bessemer, bdls., 150
Cases, 7
Sanderson Geo. & Co.
Packages, 8
Walscheid C. A.
Bundles, 67
Woodford W. O.
Cases, 45
West, Bradley & Cary.
Wire rods, bdls., 81
Order.
Bundles, 85

Metals.

Bartram Bros.
Scrap, bbls., 1
Metal and copper, ½ barrel
Scrap copper, bbls., 1
Byrne Joseph & Co.
Tin plates, bxs., 380
Brown Bros. & Co.
Tin, slabs, 696
Bruce & Cook.
Tinned plates, cs., 4
Tin, slabs, 161
Cort N. L. & Co.
Tin plates, bxs., 562
Dickerson, Van Dusen & Co.
Tin and terne plates, bxs., 2775
Tin plates, bxs., 809
Hart Lucius & Co.
Tin, ingots, 300
Henderson Bros.
Metals, pkgs., 1
Montell J. B.
Scrap, copper, bbls., 1
Naylor & Co.
Tin plates, bxs., 440
Phelps, Dodge & Co.
Antimony, cks., 50
Tin plates, bxs., 4063
Windmuller L. & Roelker
Sheet zinc, cks., 80
Wheeler E. S. & Co.
Tin plates, bxs, 722
Order.
Lead, pigs, 1517
Antimony, cks., 50
Tin, slabs, 7920
Tin plates, bxs., 245

COAL.

The demand for Coal is diminishing as the season progresses. The suspension of Coal navigation, which must soon take place, and the approaching cold weather, will reduce the output at the mines and lighten the pressure now made on the market. A very active retail trade during the winter months may be reasonably expected, as less than the usual amount has been stored in yards by consumers, in consequence of the depression in business and the scarcity of money. The demand for Cumberland Coal is fair for this season of the year. It is quoted at Georgetown at $3·90 @ $4.

The following are the circular prices fixed by the Coal companies, which are represented by Frederick A. Potts, 110 Broadway, for delivery during the month of December:

SHIPPED FROM PORT JOHNSON, ELIZABETHPORT, HOBOKEN, RONDOUT, TRENTON AND PERTH AMBOY.

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.	Chs'nut No. 2.
	$	$	$	$	$	$	$
L. & W. C. Co.'s, Wilkesbarre	5 05	5 15	5 25	5 65	6 10	4 95	4 00
L. & W. C. Co.'s, Old Co. Lehigh...	5 55	....	5 55	5 65	6 10	5 10	4 00
L. & W. C. Co.'s, Plymouth Red Ash	....	....	5 35	5 75	6 25	5 10	4 00
L. & W. C. Co.'s, Honeybrook Lehigh	5 55	....	5 55	5 65	6 10	5 10	4 00
Fulton Lehigh......	5 55	....	5 55	5 65	6 10	5 10	4 00
Scranton	5 05	5 15	5 25	5 65	6 10	4 95	4 00
Lackawanna........	5 05	5 15	5 25	5 65	6 10	4 95	4 00

PHILADELPHIA AND READING COAL AND IRON CO.'S COAL, SHIPPED FROM PORT RICHMOND.

	Lump.	Steamer.	Broken.	Egg.	Stove.	Chestnut.
	$	$	$	$	$	$
Hard White Ash Coal.....	4 55	4 65	4 75	5 15	5 60	4 45
Free Burning White Ash Coal........	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill Red Ash......	....	....	5 05	5 25	5 65	4 45
Shamokin........	....	....	....	5 40	5 80	4 50

We quote as follows: Anthracite, $4·95 @ $6·10; Cumberland, $6·25 @ $6·75; West Virginia, $6·50; James River Steam, $6·25; James River Carbonite, $9 @ $9·50; Kanawha House, $11·50; American Gas, $6·75 @ $7·25; American Cannel, $12 @ $14; Pennsylvania and Westmoreland, $6·75; Newburgh Orrel, $6·50; Sterling Ohio, $10; Ince Hall, $17 @ $18; Liverpool House Cannel, $17; Liverpool Gas, $12; Newcastle Gas, $7; Scotch, $7·60.

The Coal transported over the Cumberland Branch Railroad during the week ending Nov. 27, 1875, amounted to 5766 tons, as against 7156 tons shipped in the corresponding period of last year, showing a decrease of 1390 tons. Over the Cumberland & Pennsylvania Railroad, for the same period, the shipments were 40,700 tons, against 30,936 tons shipped in 1874, an increase of 9764 tons. The aggregate amount of Cumberland Coal shipped by the various companies so far this year amounts to 2,154,227 tons.

OLD METALS, PAPER STOCK, &c.

Business in Old Metals and Paper Stock is very quiet, and prices remain about the same as last quoted. There is little demand from consumers for any description of stocks, with the exception of Rope, which is in good request and scarce in the market. The purchasing prices offered by dealers are as follows:

Old Metals.—Copper, 16c. @ 17c. per lb.; Yellow Metal, 11c.; Brass, 10c. @ 12c.; Composition, heavy, 13c. @ 14c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4¼c. @ 4½c.; Pewter, No. 1, 18c.; do., No. 2, 8c. @ 12c.; Spelter, 5c. @ 5½c., Wrought Iron, 1c.; Sheet do., ½c.; Cast, do., ½c.; Machinery, do., ⅝c.

Rags, &c.—Canvas, Linen, 4⅝c. @ 5½c.; do. Cotton, No 1, 5⅝c. @ 6½c.; No. 2, 2½c.; White, No. 1, 6½c.; No. 2, 4c.; Colored, do., 2c. @ 2½c.; Mixed, Woolen, 2c. @ 3c.; Soft, do., 5c. @ 5½c.; Gunny Bagging, 1½c.; Jute Butts, 1⅝c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakum Junk, No. 1, 4½ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 2⅝c. @ 3c.

PHILADELPHIA.

PHILADELPHIA, Nov. 30, 1875.

The market is quite as firm in price as at our last, and in some grades of Iron a shade better, with some considerable transactions, for the times, to note. The sales of the past month have been very considerably in excess of the month previous to this, and this business may end with canal navigation now practically closed. Manufactured Irons continue quiet, with, however, a fair demand for Rails and very considerable activity in ship-building and repairs. There have been reports of some quite considerable transactions in Pig Metal on the Lehigh, which are not entirely confirmed, but there can be no doubt that the furnaces there will go out of the year with far less Iron on their banks than at the close of 1874. The approaching session of Congress, and the struggle over the Speakership, on a free trade or protective basis, indicates that the tariff question is likely to be freely discussed this winter, and may, to some extent, affect trade. We quote prices as before, but firmer, viz.:

PIG IRON.—No. 1 Foundry, $24; No. 2, $22; Gray Forge, $21·50.

BARS.—2·4c. per lb.

RAILS.—$45 to $49.

OLD RAILS.—$25 to $26.

SCRAP.—$28 to $30, with sales of 2000 tons Nos. 1 and 2, 1500 tons Gray Forge, and reported sale of 10,000 tons mixed Foundry and Forge Lehigh Iron, 500 tons Rails, 300 tons Old Rails, and small lots of Scrap, all about our quotations.

PITTSBURGH.

PITTSBURGH, Dec. 1, 1875.

PIG IRON.—General stagnation continues to be the order of the day; business, instead of improving, appears to be growing more and more depressed, and there is but little hope now of an improvement this side of January. Trade is usually dull in December, and it is customary with quite a number of the mills to shut down during the latter part of the month to take stock and make repairs. This custom will, no doubt, be generally complied with, as the mills have but few orders, and, in addition, current rates afford little or no margin for profit. This being the case, the immediate future of the market for Pig Iron is not very encouraging, and commission merchants and producers, as might be expected, are considerably troubled with the blues. It is bad enough when an article will not command actual cost of production, but it is still worse when there is no demand for it deserving of the name, as is the case at the present time. Prices continue weak and drooping, although the decline is very slow; choice brands of Open Gray Red Short, which a few weeks ago were selling in lots of 25 and 50 tons at $25, 4 mos., were sold this week at $23·50 @ $24, and good Forge Irons may be fairly quoted at $22·50 @ $23, 4 mos., and even at these figures buyers are taking hold very sparingly, from which it is evident they are apprehensive that the lowest notch has not yet been reached. It is doubtful, in the present condition of the market, whether a round lot, say 500 or 1000 tons, could be placed at $22, or even $21·50, 4 mos., although it is not probable that sellers of good, reliable brands could be found as yet at the rates in question. Some buyers were induced during the summer to anticipate future wants, on the supposition that it was good property, but the same grade of Iron could have been bought subsequently for considerably less money, and this is why buyers are adhering so tenaciously to the hand-to-mouth policy; they don't propose to be picked up the second time if they can avoid it. Charcoal Irons continue dull, and prices weak and drooping; No. 1 Foundry, $27 @ $29, 4 mos.; Charcoal Mill, $23 @ $24; Cold Blast Car-wheel, $30 @ $35 for Eastern, and $40 @ $50 for Western.

MANUFACTURED IRON.—The market continues dull and very unsatisfactory, with but little prospect of an early change for the better. Orders continue scarce, and are mostly small, and prices have been cut to such an extent that there is little or no margin for profit for the manufacturers. Prices are so irregular that it is impossible to quote with any accuracy.

NAILS.—There is no improvement to report in the demand for Nails, nor is it expected that there will be for some time to come; prices unchanged, $2·80 @ $2·85, 60 days, with two per cent. off for cash. There is a fair stock of Nails in Cincinnati and St. Louis, but the Northwest, in which Pittsburgh is more directly interested, is almost bare.

SCRAP IRON—Continues exceedingly dull; there is not enough doing to establish quotations. William McKinney & Son, Scrap dealers, have made an assignment. This, it is understood, was brought about by the failure of other parties.

THE HITCH BETWEEN THE PUDDLERS AND MANUFACTURERS.—In October the puddlers agreed to work during November at $5 per ton, and to be governed thereafter by the rates paid for the same work in the Eastern cities. The time agreed upon expired last week, and on Friday evening a meeting was held by the Conference Committee to determine upon some course for future government. The manufacturers reported that they had secured an agent, who wrote to various mill-owners in Pennsylvania, New York, New Jersey, Delaware, Kentucky and Virginia, and other places. He had received answers from about three-fourths of the parties addressed, from which they learned that the average price paid was $4·25 per ton. When the agent had read his statement the puddlers demanded his withdrawal from the meeting, and after he had retired they also reported the result of their investigation. They had consulted a number of foreign manufacturers, but were unable, it is alleged, to produce any refutation of the manufacturers' statement that $4·25 per ton was the average price for boiling. The manufacturers then renewed their offer of $4·50 per ton, claiming that they had no authority to go higher. The puddlers rejected the offer, however, claiming that they were not at liberty to accept it, and so the conference adjourned without agreement, and another lock-out is probable. Another conference will be held on next Saturday. Both sides have since been holding meetings, but without any definite result. It is hinted that the puddlers have agreed upon a rate, but as yet it has not been made public. The feeling prevails in well-informed circles, that there will be no lock-out.

BOSTON.

Nov. 27.—*Pig* is moving this week in odd small lots; a very trivial business, but at somewhat irregular prices. The inquiry is fair, but there is a want of confidence that values have settled to a steady point; hence, buyers piece out their wants in the most economical manner. We quote: No 1, $24 to $26; No. 2, $22 to $24; Gray Forge, $19 to $21, nominally. *Bar* is selling in a jobbing way in an erratic manner. While many of the dealers are idle, a few seem to be putting out goodly quantities. The sales are chiefly in small sizes, for sleighs and blacksmithing purposes. Prices are not improved, quotations ranging from $55 to $57 on Refined and $51 to $53 for Common. *Steel* is selling rather better than a week ago, and business turns in almost all styles, grades and qualities. We quote: American Tool, 14c. to 15c.; American Machinery, 9c. to 9½c.; Bessemer Tires, 6¾c. to 7¼c.; Sweet's Excelsior Tire, 8½c. to 12c.; English Tool, 16c. to 18c., gold. *Copper* has again been turned upward by the strength of the combination, and closes the week quoting steady at 23⅜c. to 23½c. for spots and futures. The business is small. For manufacturers we quote New Sheathing, 30c.; Bolts and Braziers, 31c.; Yellow Metal Bolts, 20c. to 29c. *Lead* here has felt the impulses of the Western markets, and quotes with a small business at an advance of ⅛c. We quote Pig, 5¾c. for Domestic, and 6⅜c. to 6½c. for Foreign; Sheet and Pipe Lead, 9c., currency; Tin Lined Pipe, 16½c., Bar Lead, 9c., less usual trade or 10 per cent. discount. *Antimony* is firm, with a better inquiry at 13½c. *Spelter* is strong and quiet at $7·45, 30 days, and $7·35, prompt cash, all currency. Silesian is dull at $7·30. *Tin*, from the advices from Singapore of a civil commotion, has advanced in London sixpence, but on this side the market stands simply strong and unchanged. We quote Straits, 19¾c.; Banca, 24c.; Refined English, 19¾c. to 20c., gold. Plates are active; we quote Charcoal I. C., $7·25 to $7·75; Coke, $6·50 to $6·75; and Terne at $6·15 to $6·50, gold.—*Com. Bulletin.*

ST. LOUIS.

Messrs. SPOONER & COLLINS, Iron commission agents, 409 North Third street, St. Louis, under date of Nov. 26, report the Iron market as follows: No change to note the past week. Prices seem to have struck bottom, and we do not expect any change for the present except for the better. The demand for the next month will be small; but with very light stocks in the hands of most of our foundries and mills, we look for an advance of from $1 to $2 per ton upon the opening of business in 1876.

Mo. Stone Coal, No. 1 F'dry.	$26·50 @ 27·00—4 mos.
" " No. 2 F'dry.	24·00 @ 25·00—4 mos.
" " Gray Mill...	23·50 @ 24·00—4 mos.
" Charcoal, No. 1 F'dry...	26·00 @ 27·00—4 mos.
" " No. 2 F'dry...	23·50 @ 24·00—4 mos.
" " Gray Mill...	23·00 @ 24·00—4 mos.
Tenn. Charcoal No. 1 F'dry..	25·00 @ 26·00—4 mos.
" " No. 2 F'dry	23·00 @ 24·00—4 mos.
" " Gray Mill....	22·00 @ 23·00—4 mos.
" Coke Iron No. 1 F'dry..	25·00 @ 26·00—4 mos.
" " No. 2 F'dry..	23·00 @ 24·00—4 mos.
" " Gray Mill...	23·00 @ 24·00—4 mos.
H. R. Charcoal No. 1 F'dry..	26·00 @ 27·00—4 mos.
H. R. " No. 2 F'dry..	24·00 @ 25·00—4 mos.
H. R. " Gray Mill.....	24·00 @ 25·00—4 mos.
Massillon Iron, A, No. 1	34·00 @ 35·00—4 mos.
" " B, No. 1	32·00 @ 33·00—4 mos.
" " No. 2	30·00 @ 31·00—4 mos.
Cold Blast Car Wheel, Mo....	32·00 @ 35·00—4 mos.
" " Tenn.	30·00 @ 32·00—4 mos.
" " Ala..	30·00 @ 32·00—4 mos.
" " Hanging Rock..............	35·00 @ 40·00—4 mos.
Mo. Charcoal Blooms........	60·00 @ 65·00—4 mos.
" Scrap "	60·00 @ 65·00—4 mos.
Mo. Charcoal Hammered Billets	80 00 @ 90·00—4 mos.
Assorted Bar Iron...........	2 4-10 rate.
No. 1 Wrought Scrap.................	1c. per lb.
Heavy Cast "	¾c. "
Light Cast "	½c. "

CINCINNATI.

Messrs. L. R. HULL & Co., under date of Nov. 29, write us as follows: PIG IRON.—The market for all grades has been fairly active, prices showing no material change. Cold Blast Irons are very quiet.

HOT BLAST CHARCOAL.

Hanging Rock No. 1..℔ ton.	$25·00 @ 26·00—4 mos.
" " No. 2...........	23·00 @ 24·00—4 mos.
" " Forge	21·00 @ 22·00—4 mos.
Southern Brands No. 1........	23·00 @ 24·00—4 mos.
" Forge	21·00 @ —4 mos.
Virginia No. 1..................	24·00 @ 25·00—4 mos.
" No. 2...........	22·50 @ 23·00—4 mos.
" Forge...........	21·00 @ 22·00—4 mos.

HOT BLAST STONE COAL AND COKE.

Hanging Rock No. 1...℔ ton.	$23·00 @ 24·00—4 mos.
" " Forge..........	21·00 @ —4 mos.
Red Short No. 1...............	27·00 @ —4 mos.
" Forge..............	24·00 @ —4 mos.
Am. Scotch, No. 1..........	24·00 @ 25·00—4 mos.

COLD BLAST CHARCOAL.

Hanging Rock Car Wheel ℔ tn.	$40·00 @ 50·00—4 mos.
Missouri " "	35·00 @ 40·00—4 mos.
Southern Br'ds " "	30·00 @ 40·00—4 mos.
Machinery and Forge..........	30·00 @ 35·00—4 mos.
Blooms........................	.. @ .. —4 mos.

RICHMOND.

Mr. ASA SNYDER, Iron Merchant and Furnace Agent, Richmond, Va., writes as follows under date of Nov. 27: The market for Charcoal Irons continues very unsettled. Prices for established brands have not fallen since last report, chiefly because of the very light receipts. The stock of new Irons is also diminishing, sales being largely in excess of receipts. Since last report over 400 tons have been sold. The sales from the latter stock have been under quotations, but from the former nearly at the highest quotations.

Virginia cold blast Charcoal Pig Irons.	$27·00 @ 33·00
" hot " " "	24·00 @ 28·00
Va. hot blast Coke Pig Iron, No. 1 ex.	24·00 @ 25·00
" " " " No. 2 ex.	22·00 @ 23·00
" " " " No. 3 ex.	21·00 @ 22·00
Virginia Anthracite. No. 1 ex.........	25·00 @ 26·00
" " No. 2 ex..........	23·00 @ 24·00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Nov. 27, writes us as follows: The market continues dull, sales being confined to Iron for immediate use. Prices are without change. The usual time, four months, is allowed on the quotations below:

HOT BLAST CHARCOAL.

No. 1 F'dry, from Hanging Rock Ores.	$25·00 @ 26·00
" 2 " " " " ..	23·00 @ 24·00
" 1 Mill, " " " ..	— @ —
" 1 F'dry, from Alabama, Georgia and Tennessee Ores..............	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores...............	22·00 @ 23·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores..............	21·00 @ 22·00

HOT BLAST STONE COAL AND COKE.

No. 1 F'dry, from Hanging Rock Ores.	$23·00 @ 24·00
" 2 " " " " ..	22·00 @ 23·00
" 1 Mill, " " " ..	21·00 @ 22·00
" 1 F'dry, from Alabama, Georgia and Tennessee Ores..............	23·00 @ 24·00
" 2 F'dry, from Alabama, Georgia and Tennessee Ores.............	22·00 @ 23·00
" 1 Mill, from Alabama, Georgia and Tennessee Ores..............	21·00 @ 22·00
No. 1 F'dry, from Missouri Ores......	24·00 @ 25·00
" 2 " " "	24·00 @ 25·00
" 1 Mill, " "	25·00 @ 26·00

COLD BLAST CHARCOAL.

Car Wheel from Hanging Rock Ores..	35·00 @ 40·00
" " Tennessee Ores.....	28·00 @ 30·00
" " Alabama and Georgia Ores.......................	28·00 @ 38·00
Car Wheel from Kentucky Ores.......	28·00 @ 40·00

BALTIMORE.

Messrs. R. C. HOFFMAN & Co., Iron and commission merchants, Nos. 23 and 25 South Frederick street, report the Pig Iron market as follows, under date of Nov. 29: We have no change to note in the Iron market since our last report. Sales have been light at about quotations.

Baltimore Charcoal......................	$32·00 @ 35·00
Virginia "	30·00 @ 34·00
Anthracite No. 1........................	24·00 @ 25·00
" No. 2........................	22·00 @ 23·00
" No. 3........................	21·00 @ 22·00
White and Mottled........................	18·00 @ 20·00

Messrs. WYETH & BROTHER, Iron and Steel merchants, South Charles and Lombard streets, report us the following prices under date of Nov. 30: Business continues ruling about the same as reported for the past several weeks—dull and depressed, with unaltered list.

AMERICAN REFINED BAR IRON.

1 to 6 wide by ⅜ to 1 thick.. } 1 to 4½ wide by 1⅛ to 2 thick }	2 5-10 to 2 6-10c.	℔ lb.
Round and square, ordinary sizes, from ⅜ to 2 inclusive	2 5-10 to 2 6-10c.	"
Hoop Iron, 1⅛ wide and upward.....	3⅜ to 4c.	"
Band Iron, from 1⅛ to 4 in. wide.....	3 to 3¼c.	"
Horse Shoe Iron ⅜ to 1 wide by ⅜ to ⅝ thick........................	3⅛ to 4c.	"
Norway Nail Rods................	7 to 7¼c.	"
Black Diamond Cast Steel, Flats, Squares and Octagon, ordinary sizes........	15½ to 16c.	"
Machinery Steel......................	11 to 11½c.	"
Cast Spring Steel.....................	10 to 10½c.	"
Homogeneous Steel Plate............	10½c.	"
Perkins' Horse Shoes, per keg of 100 lbs......	$5·12½	
" Mule Shoes " "	6·12½	
Common Horse Nails, from 14c. to 18c. per pound.		

	10	9	8	7	6	
Putnam Horse Nails..	23	24	25	26	28c.	per ℔.
	10	9	8	7	6	
Globe Horse Nails..	23	24	25	26	28c.	per ℔.

R. R. Spikes......5½ by 9-16 at 2 9-10c to 3c. per lb.

CLEVELAND.

Messrs. C. E. BINGHAM & Co., 25 West Main street, under date of Nov. 29, quote the Iron market as follows, 4 mos. time:

FOUNDRY IRON.

No. 1 Lake Superior Charcoal..........	$29·50—4 m.
No. 2 " "	29·00—4 m.
No. 1 Anthracite........................	27·00—4 m.
No. 2 "	25·50—4 m.
No. 1 Bituminous........................	27·00—4 m.
No. 2 "	25·50—4 m.
No. 1, Cherry Valley Am. Scotch........	29·50—4 m.
B—1 " "	27·50—4 m.
No. 2, " "	26·00—4 m.
No. 1 Massillon........................	29·90—4 m.
B—1........................	27·00—4 m.
No. 2........................	24·00—4 m.

CAR WHEEL AND MALLEABLE IRON.

No. 3 Lake Superior Charcoal...........	$28·50—4 m.
No. 4 " "	30·00—4 m.
Nos. 5 & 6 " "	30·00—4 m.

BESSEMER IRON.

Nos. 1 and 2 Lake Superior Charcoal....	$29·00—4 m.

FORGE IRON.

No. 1 Gray	$23·50—4 m.
White and Mottled........................	22·50—4 m.

FOREIGN.

FRANCE.

(*Moniteur des Interets Materiels*).

PARIS, Nov. 14, 1875.—*Metals.*—The general markets have not improved; the tendency is, on the contrary, if anything, downward, except in cases where special causes produce a temporary revival, as has been observable with respect to Tin during the last few days. Consumers confine their purchases to the strictly requisite, speculators have lost courage, and the money market is in a restless condition. While this state of affairs prevails there is little prospect of any permanent advance in prices before January next. *Copper* has led to more extensive dealings in this city and at Havre, some 900 tons of direct importation, chiefly best brands Chili, having been sold to leading consumers at 217·50 francs, while we quote common ditto 212·50; Ingots, 222·50; English Tough Cake, 222·50, and pure Corocoro ore, 215. Copper remains firm at Marseilles, although the dealings are insignificant; small ingots are quoted 215. *Tin* was again on the downward track, when the telegraph informed us of troubles in the Malay Peninsula, which caused a recovery of £2 in Straits at London, and had, to a certain extent, a corresponding effect on the Continent. It is, of course, impossible to form a correct judgement as to the importance of these difficulties at this early stage; they may amount to very little, or eventually extend beyond Malacca. But anything that may possibly curtail the production of Tin in any quarter is seized upon with eagerness by operators for a rise, who naturally make the best of it, especially at a moment when the market in Holland is still largely oversold by their opponents. Our own market has remained impassive, and Tin is rather weak at 235 francs for Banca, here or at Havre; Straits, 225; English, at Havre or Rouen, 222·50. Tin is also but indifferently well held at Marseilles, but not much of a decline is expected; Straits and Billiton there, 220. *Lead.*—The decline in this metal is looked upon as having been altogether too precipitate, and *bona fide* consumers are now coming forward. A favorable reaction is, however, slow in making headway in our own midst, and the market still remains heavy here at 56·50 to 57·50, according to sort. Lead is weak and inactive at Marseilles at 52·75 to 53 francs. The demand for *Spelter* has been rather on the increase everywhere, and as the supply continues moderate, great firmness and a slightly upward tendency are noticeable. We are stiff here at 65 francs Silesian, deliverable at Havre. At Marseilles no alteration; Vieille Montagne sheet there 80 francs, other brands 77. *Iron.*—The French markets still suffer from a lack of private enterprise; the only large purchasers at present are the railroad companies, domestic and foreign, and our government. The committee on railroads in the Assembly will investigate the state of French lines between the 8th instant and the 20th proximo. The points specially in view are the following: Freights and passenger fares, and the relations of the lines toward each other, as to how reforms may be introduced in order to benefit the public at large, while duly considering the interest of the lines themselves. For Russia the Creuzot Company has furnished the St. Petersburg-Warsaw-Nikelia line 2500 tons Steel Rails at an equivalent of £11 per ton; English companies at the same rate, 6106 tons. The newly invented annular railroad ties have been adopted by the Bordeaux-La Sauve line; the inventor is Monsieur Chopin, engineer of the Charentes Company. Another newly patented invention for the use of tramways is the dummy engine of Merryweather & Sons, London, now running on the southern tramway of Paris, from the Rue de Rennes to the Porte de Chatillion. *Coal.*—Cold weather has made its appearance, but stocks for household purposes have been laid in, and no further rise in Coal need be expected. In the Loire district Coal now accumulates on the hands of companies. From the North and the Pas de Calais the news is cheerful; Coal is moving off steadily and production is kept within bounds.

BELGIUM.

(*Revue Universelle*).

BRUSSELS, November 14, 1875.—*Iron.*—Although with some rare exceptions the Iron situation in our country cannot be called a brilliant one, we are not as badly off as some other Iron producing countries. Some of our larger establishments, such as Cockerill, Sclessin and Thy le Chateau, have sold all they can turn out during the ensuing winter. Others are getting on from hand-to-mouth, it is true, and their profits might be better, but none of them think for a moment of following the example of some overgrown British concerns which do not scruple to turn adrift large numbers of their workmen for the winter time. The Sclessin Company has just made a contract for furnishing our city with a second gas works. The first "caissons" for the Wolga bridge, which this company contracted for Russia, have just arrived out at St. Petersburg, the time having been strictly kept which had been fixed for their delivery. We mention this by way of curiosity, this being, we believe, the first time that a Belgian manufacturer of note has punctually fulfilled a contract up to the date stipulated. One of the most frequent reproaches made to us from abroad is this lack of punctuality of which we are chronically guilty. Messrs. Adhemar, Le Roy & Co. of this city, have just contracted for the delivery at Bucharest of 350 freight cars. *Coal.*—Production is proceeding with the utmost regularity without being in excess of the current requirements of Belgian industry. But there is not much animation in manufacturing branches, and contracts for large amounts of Coal are not readily made, except for glass works and sugar refineries. Coal for households sells with ease. The improvement in values, to which we alluded a couple of weeks ago, has made no further progress. This is due to foreign competition; both the English and Germans are making renewed efforts to rid themselves in Belgium of a portion of their surplus stocks. Fortunately, we ship to France about as much as we get from England and Germany.

GERMANY.

(*Borsenhalle*).

HAMBURG, Nov. 13, 1875.—*Metals.*—Although there is nothing positively disquieting in the general aspect of business in Germany, there have been some developments within the past month or two the reverse of encouraging. We allude here more specially to the failure of the principal railroad speculator of Central and Eastern Europe, Strousberg. The ramifications of disaster which this smash entailed have been so widespread that the losses are fearful to contemplate, and a large share of them has fallen to the lot of German industry in the metal branch. Many forcible realizations have taken place in consequence, and others will follow. Even our neighbors, the Belgians, are indirectly sufferers thereby, inasmuch as this man was one of the Iron speculators in the Grand Duchy of Luxembourg, causing prices there to be artificially screwed up for a time, while the selling out of these lots now breaks the surrounding markets. The present year will stand notorious for widespread and, in some instances, colossal failures in Europe, and is, to some extent, a repetition on this side of the American panic two years ago, with the only exception that this European crises has pulled down a much larger portion of firms deemed first-class, and that it has lasted now some eight months without interruption. The consequence is that people who had become cautious subsequent to the American panic, are now more so than ever, and the spirit of enterprise has received a severe check all over Germany. There is a deep distrust of everything that is called bargains; speculation of any kind is looked upon with suspicion, and nothing but legitimate consumption can be relied upon to eventually mend matters. *Copper* has been inactive, and nothing moves off except it be for immediate wants. Prices have nevertheless not varied. Berlin is steady at 91 to 94 marks the 50 kilos for English and Australian. Stettin is nominal at 95 to 100 marks. Nothing transpires in our own midst. Notwithstanding the result in Malacca, Tin has remained apathetic. Even events specially affecting an article seem to have no effect on our metal people. Berlin is quiet at 95 to 95·50 for Banca, and 92 to 92·50 for English. We quote English and Banca here 95 to 96. *Lead*, on the other hand, has become firmer. Berlin quotes 23 to 24 for German sorts. Stettin is steady at 25 for German and 27 for Spanish. We are weak here; German, 23·75 to 24·50; English, 25·50 to 26; and Spanish, 26·10. *Spelter* has been inactive. At Berlin the quotation is 25 to 26; at Stettin, 27. Nothing has been done either here or at Breslau, where prices are nominal.

HOLLAND.

(*Koch & Vlerboom*).

ROTTERDAM, Nov. 13, 1875.—*Tin.*—Banca had been gradually giving way, and during the past four weeks declined from 53 to 51½ guilders; but during the past day or two a favorable reaction has manifested itself, and we have recovered very nearly the highest previous figure, 53—the present asking price—all owing to the revolt in the British Straits settlements, of which the cable has brought us news. On the 30th instant the Trading Company will sell 23,000 slabs Banca, the last auction of the current year. A year ago Banca Tin stood 52¼; January 1, 1875, 57¼; July 1, 1874, 58½; and January 1, 1874, 70½. Billiton, spot and afloat, we quote 50¾ to 50½ guilders, all the 50 kilos.

CHINA.

(*Arnhold, Karberg & Co*).

CANTON, Oct. 13, 1875.—*Metals.*—*Tin.*—An active demand has existed throughout, and importers have been able to establish a further advance of $1 per picul on former rates. *Lead.*—Only a retail trade is going on in this article. Quotations are unaltered, but must, to a certain extent, be regarded as nominal. *Quicksilver.*—This article has taken a fresh start during the early part of the period under review, and small sales have been effected at $115 up to $120 per picul; subsequently, however, holders have offered their stocks more freely, and prices again receded to $105 to $106. At the close only a retail trade goes on, and in view of the large stocks now available, and the heavy supplies still to be expected, it is impossible to say what the immediate future of the article is likely to be. We quote Tin $22 to $24·75, and Lead, $7·50 to $7·70.

OCEANICA.

(*Sydney Herald*).

SYDNEY, Sept. 19, 1875.—*Nickel.*—A contract has been entered into at Noumea, New Caledonia, by Mr. Pratch with Messrs. Tully & Co., of the Mont d'Or Nickel Mine, adjoining the Percy and Kelly Nickel Mine, to mine and deliver 3000 tons of ore, at the rate of 150 tons a month, for £10,500, being at the rate of £3. 10/ per ton. Direct offers have been received from the Bank of New Caledonia, Paris, to purchase ore from the mine, free on board at New Caledonia, on the following terms, for the period of one or five years, viz.: 5 to 7½ per cent. ore at £21 per ton; 7½ to 10 per cent. £32, and 10 per cent. £40. Assuming that 50 tons 5 per cent. ore can be delivered weekly, the profit accruing to the company would be something like £50,000 per annum.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(*From our Regular Correspondent.*)

SHEFFIELD, ENG., Nov. 15, 1875.

THE GREAT DEPRESSION

in the iron and allied industries to which repeated allusion has been made in my recent reports, grows and is fast assuming very serious

aspects in more than one district. In Scotland, to begin in the far North of the iron producing localities, there is only a very moderate amount of work doing at the iron works proper, although there are over one hundred furnaces in blast throughout the Scottish iron districts. The production of these furnaces being almost wholly shipped either foreign or coastwise, very little benefit ensues to the local forges or mills, which are, indeed, now in a state of comparative inactivity. Leaving the land o' cakes and proceeding, figuratively speaking, to the Cleveland and general North of England district, we come across a far more ominous state of affairs. The North of England Ironmasters' Association have just held a meeting, and have arrived at the determination to seek a reduction of 15 per cent. from the present rate of wages paid to all classes of their workmen. By the arrangements entered into through conciliation and arbitration board, which bind both parties, the drop cannot be enforced without a long notice, unless the men consent, which they may possibly do under the circumstances. In addition to Bolckow, Vaughan & Co., Messrs. Hopkins, Gilkes & Co., and other large employers of labor have given notice of the termination of all their men's contracts. At Stockton-on-Tees almost all the leading establishments are either closed or almost wholly suspended in all the principal departments. It is estimated that in the course of another month there will be fully 12,000 men out of work in the district last mentioned in the iron trade alone. The Tyne chemical manufacturers and the shipbuilders have also given their men notices of an average reduction of 10 per cent.—a fact which serves to intensify the previously existing depression. In other parts of the country a great number of men are out of employment. At Sheffield I know of at least one great establishment which is over 2000 men short of its ordinary complement. South Wales is suffering severely, and is hardly likely to recover any of its lost or diverted iron trade before the latter part of the spring of 1876. It will thus be gathered from this brief *resume* how dull and bad our iron trade is, and what slight chances there are of improvement during the next three months. It is inferred, and I am afraid with but too much reason, that the winter (which already threatens to be exceedingly severe) will be one fraught with dire results to the unemployed operatives, unless they are succored in an almost unprecedented degree by the wealthy elsewhere. People who see results naturally look about for causes, but among the many who speculate upon

THE CAUSE OF THE DEPRESSION

there are few who agree in all points. Some aver over production during the past four or five years. Others adhere to the theory of a suddenly restricted foreign demand, coupled with an amazingly powerful Continental competition. Another section attributes the stagnation to the United States, which, by dint of protective duties and energetic internal development, has, say they, upset the balance of industrial production, and so turned the iron trade upside down. Others seek for the causes of the stagnation nearer home, and fancy they can trace them out with analytical accuracy. The *Financier*, writing upon the subject, says:

"The adjustment of the coal and iron trades under the great reaction since 1873 proceeds but slowly, and the recent events in the North of England have again called attention to a subject of chronic difficulty. The fundamental cause of depression and discordance in the various branches is the greatly reduced scale of orders, from ships and rails to nearly every kind of manufactured iron. But to this must be added the comparatively high price of the raw materials—iron stone, coal and pig iron—or, to express it perhaps more exactly, the difficulty of producing the raw materials at a lower price with any profit, or less than actual loss. This, again, hinges upon the high rate of wages in nearly all departments, which, though in many cases under considerable reduction, is still above the level of 1870, and much higher than was customary in former periods of equal depression of trade. Nor, in this point of view, is the higher rate of wages the only obstacle to such flexibility of values as would more aptly meet and stimulate the reduced scale of demand. The changes introduced into mining operations by the Mines Regulation Act—the shorter hours, the larger number of men that have to be employed, the smaller output of mineral per man, and the much larger absorbtion of capital in proportion to the product—have all a decided effect of the same kind as the higher rate of wages. The consequences are much what might have been reasoned out on economic principles. The price of the rawer materials does not so soon fall to a range at which new and extended business would be solicited; and, as a necessary result, a recovery of trade is being all the more delayed."

BRITISH EXPORTS.

The monthly Board of Trade returns just issued show that even tabularly our exports are beginning to show a very serious diminution. During October the total value of our exports was £18,474,744 as compared with £21,918,528 in October, 1874, or £22,341,239 in the same month of 1873. The total for the ten months ending October 31st was £187,840,338, as against £202,859,436 in 1874, and £216,016,759 in 1873, or decreases of 7 and 13 per cent. respectively. Summarized in brief form our exports during the ten months have been these: Of coal we have shipped 12,059,474 tons, valued at £8,176,362, against 11,709,959 tons, valued at £11,100,354; copper, 614,034 tons, valued at £2,712,837, against 605,421, valued at £2,687,698; hardware and cutlery, £3,559,062, against £3,690,321; iron and steel, 2,098,720 tons, valued at £22,104,316, against 2,104,112 tons, valued at £26,771,178; steam engines, £2,345,922, against £2,691,706; other descriptions of machinery, £5,498,981, against £5,551,968. On looking over the appended figures you will not fail to notice the great falling off in the exports of railroad iron to Russia, Holland, Belgium, Spain and the United States; of cutlery to the United States, the Argentine Republic and British India; of machinery to Germany and Italy, and of tin generally.

RAILROAD IRON OF ALL SORTS.

Railroad, of all Sorts. To	1874. Tons.	1875. Tons.
Russia	138,223	102,174
Sweden and Norway	66,479	48,906
Denmark	8,388	6,941
Germany	7,059	3,337
Holland	17,688	6,779
Belgium	14,574	466
France	2,777	110
Spain and Canaries	20,262	2,599
Italy	11,768	10,891
Turkey	10,087	1,180
Egypt	11,249	6,838
United States	91,626	17,711
Brazil	18,987	10,717
Peru	11,180	12,034
Chili	16,631	14,097
British North America	59,512	34,608
" India	29,661	31,680
Australia	73,142	68,217
Other countries	90,544	51,987
Total	708,537	422,212

Iron—Pig. To	Tons.	Tons.
Germany	142,875	213,532
Holland	162,202	191,001
Belgium	70,336	89,697
France	58,159	75,435
United States	34,986	42,441
British North America	29,574	37,014
Other countries	127,296	157,586
Total	625,428	806,706
Bar, Angle, Bolt and Rod. To	Tons.	Tons.
Russia	20,459	23,322
Germany	6,678	5,948
Holland	4,200	5,691
France	626	635
Italy	14,249	19,438
Turkey	9,256	9,137
United States	3,260	2,956
British North America	27,555	21,740
British India	30,250	35,077
Australia	17,612	25,037
Other countries	76,005	79,443
Total	210,150	228,124
Wire of iron or steel, except telegraph wire	28,910	35,355
Hoops, Sheets and Plates. To	Tons.	Tons.
Russia	7,891	12,616
Germany	8,235	10,244
Holland	5,784	8,049
France	1,631	1,498
Spain and Canaries	5,241	4,688
Italy	6,327	8,417
United States	6,782	10,539
British North America	9,930	7,127
British India	17,701	28,165
Australia	18,625	29,225
Other countries	48,690	53,464
Total	136,237	169,032
Cast or Wrought Iron, except Ordnance. To	Tons.	Tons.
Russia	15,650	14,586
Germany	11,380	16,861
Holland	6,846	8,240
France	3,516	4,649
Spain and Canaries	7,804	4,850
United States	18,583	6,623
Peru	2,723	1,368
Brazil	6,495	5,838
British North America	26,115	14,798
British Possessions in South Africa	5,075	6,339
British India	18,324	22,217
Australia	29,797	34,713
Other countries	70,174	62,159
Total	222,482	203,241
Old Iron for Re-manufacture. To	Tons.	Tons.
United States	7,674	6,776
Other countries	30,973	9,994
Total	38,647	16,770
Steel, Unwrought. To	Tons.	Tons.
France	2,187	2,252
United States	10,930	8,952
Other countries	12,844	13,831
Total	25,961	25,035
Manufactures of steel	8,113	9,141
Total of iron and steel	2,104,112	2,098,720
Hardware and Cutlery. To	£	£
Russia	93,710	88,172
Germany	228,452	220,859
Holland	95,095	88,919
France	118,321	120,086
Spain and Canaries	89,480	84,257
United States	543,591	482,472
Spanish West India Islands	68,761	107,739
Brazil	220,547	232,932
Argentine Republic	119,004	91,493
British North America	253,440	241,766
British India	261,652	238,904
Australia	503,393	565,965
Other countries	1,094,935	992,498
Total	3,690,321	3,559,062
Tin Plates. To	£	£
France	1,750	2,343
United States	77,068	81,675
British North America	3,276	3,845
Australia	2,309	2,510
Other countries	18,244	26,731
Total	102,647	117,104
Machinery and Mill Work. Steam Engines. To	£	£
Russia	297,744	302,127
Germany	383,662	229,712
France	16,114	19,686
Spain and Canaries	46,233	57,081
Italy	176,623	119,814
Egypt	82,437	18,920
Brazil	64,164	46,109
British India	290,474	365,777
Australia	225,429	205,113
Other countries	1,108,826	881,583
Total	2,691,706	2,245,922
Other Descriptions. To	£	£
Russia	805,892	934,716
Germany	880,461	680,373
Holland	3 2,342	226,330
Belgium	334,464	253,654
France	377,996	451,760
Spain and Canaries	183,189	240,070
Egypt	57,521	57,312
United States	169,856	144,384
British India	659,710	968,928
Australia	310,791	303,986
Other countries	1,340,246	1,237,508
Total	5,551,968	5,498,981
Brass. Manufactures of (not being ordnance)	Cwt. 90,651	Cwt. 75,613
Copper—Unwrought. To	Cwt.	Cwt.
Germany	55,024	44,092
Holland	35,257	33,544
Belgium	26,339	24,965
France	40,721	63,567
United States	724	20
British India	8,432	4,571
Other countries	17,180	15,738
Total	183,677	186,487
Wrought. To	Cwt.	Cwt.
Russia	28,305	28,934
Germany	7,324	7,095
Holland	4,768	5,937
France	803	2,428
Italy	9,898	9,433
Turkey	24,123	16,018
Egypt	9,479	8,806
United States	717	168
British India	41,396	61,441
Other countries	54,756	57,474
Total	181,659	193,644
Mixed or Yellow Metal Sheathing	240,085	233,908
Total Copper	605,421	614,034
Lead. To	Tons.	Tons.
Russia	8,566	8,179
Germany	1,837	1,759
France	2,021	2,227
United States	2,446	143
China and Hong Kong	7,677	8,090
British India	1,450	1,493
Australia	2,256	2,478
Other countries	6,635	6,692
Total	32,888	31,061
Teleg'phic Wire & Apparatus	£ 1,747,186	£ 877,091
Tin—Unwrought. To	Cwt.	Cwt.
Russia	14,167	16,599
Germany	18,567	15,351
France	26,768	15,715
Turkey	7,716	6,409
United States	44,655	12,155
Other countries	25,523	24,206
Total	137,396	90,935
Zinc or Spelter	61,745	65,751

SCOTCH PIG.

The Glasgow warrant market opened in a fairly strong manner, but afterward gave way, and in the course of the first two or three days of the week g. m. b. warrant prices fell as low as 60/. Subsequently a very slight reaction set in, but at the termination of the week's business on Friday night quotations had only been sent up to 60/4 per ton. The shipping trade remained good and active during the whole of the week, the total being 10,531 tons, or 812 tons more than during the same period of 1874. There are now 69,213 tons in Connal & Co.'s stores, and 115 furnaces in blast in Scotland. Freights are unchanged.

Writing from Glasgow, on November 12th (night), Messrs. J. Watson & Co. said: "The price of Scotch pig iron warrants receded this week from 61/3 to 60/, but afterward improved to 60/6, closing to day buyers, 60/3; sellers, 60/4½.

	No. 1.	No. 3.
G. M. B., at Glasgow	62/6	61/
Gartsherrie, "	73/	64/6
Coltness, "	77/6	65/6
Summerlee, "	70/6	63/
Langloan, "	73/6	63/
Carnbroe, "	66/6	63/
Calder, at Port Dundas	74/	63/
Lengarnock, at Ardrossan	69/	63/6
Eglinton, "	63/	62/6
Dalmellington, "	63/6	62/6
Snotts, at Leith	74/6	65/6
Kinneil at Boness	64/6	61/6

Messrs. Wm. Colvin & Co. (Glasgow, Nov. 16) say: "There has been a good steady business done in warrants during the past week, the price ranging from 60/ to 60/6, cash, and 60/3 to 60/9, one month. To-day business was done from 60/3 to 60/6, cash, and 60/6 to 60/9, one month, closing with buyers at the lower, and sellers at the higher prices. There is little alteration to report in the value of shipping iron; prices are high as compared with warrants, and, consequently, deliveries ex store are again taking place. We quote:

	Deliverable alongside. No. 1.	No. 3.
G. M. B., at Glasgow	62/	60/6
Gartsherrie "	73/	65/
Coltness, "	77/6	66/
Summerlee, "	70/	62/6
Langloan, "	73/	63/
Carnbroe, "	66/6	62/6
Monkland "	62/6	61/
Clyde "	64/	62/
Govan, at Broomielaw	64/	62/
Calder, at Port Dundas	75/	64/
Glengarnock, at Ardrossan	69/	64/
Eglinton, "	63/	62/
Dalmellington, "	63/	62/
Carron, at Grangemouth	62/6	..
Carron, " specially selected	67/6	..
Shotts at Leith	74/	65/
Kinneil, at Bo'ness	64/	61/
Bar Iron	£8. 0/ to £8. 10/	
Nail Rods	£9. 0/.	

SHIPMENTS.

	Tons.
Week ending Nov. 13, 1875	10,663
" Nov. 14, 1874	9,048
Increase	1,615
Total Increase for 1875	86,203

Messrs. John E. Swan & Brother's (limited) prices current, Glasgow, Nov. 12:

Glasgow Brands.	Furnaces Blowing, 115	Furnaces Out 30.	Furnaces Built, 154.	Prices. No. 1.	No. 3.	No. 4
Gartsherrie	13	3	16	72/6	65/	64/
Coltness	12	0	12	77/	65/	..
Summerlee	6	1	8	70/	62/	63/6
Langloan	7	0	8	73/	63/	..
Govan	4	0	5	62/6	60/6	62/6
Calder	3	1	7	74/	64/	64/
Shotts { Bess'mer	2	0	2	80/	..	..
Shotts { Ordinary	3	1	4	74/	65/	..
Carnbroe	4	2	6	65/	62/	63/6
Wishaw	2	0	3	..	..	..
Monkland	6	0	6	62/	60/6	..
Chapelhall	3	0	3	67/6	..	..
Clyde	5	0	6	63/	61/	..
Quarter-Clyde	4	0	4	62/	60/6	..

* f. o. b. Glasgow, 1/ per ton, extra.

Glasgow Warrants, 3-5 No. 1; 2-5 No. 3, g. m. b. 60/4½.

WEST COAST BRANDS—*f. o. b. Ardrossan.*

Glengarnock		7	2	9	68/6	63/ 63/
Ardeer		4	1	5		
Eglinton	Brand'n Egint'n	6	2	8		
Lugar		4	0	4	63/	62/ 62/6
Muirkirk		3	0	3		
Portland		3	3	6		
Dalmellington		6	2	8	63/	62/ 60/

EAST COAST BRANDS—*f. o. b. in the Forth.*

Kinneil		3	1	4	64/	61/ 60/
Almond		2	1	3	63/	61/ 60/
Carron	Select'd Ordn'y	4	2	6	67/6	.. ..
					62/6	.. ..
Lochgelly		0	4	4	..	.. ..
Lumphinnans		0	2	2	..	.. ..
Bridgeness		0	2	2	..	.. ..

TRADES OF SHEFFIELD.

The week has again been dull, and almost wholly uneventful from a commercial point of view, the stagnant course of business having sluggishly moved onward without any one incident worthy of especial notice. Some attention has necessarily been devoted to the increasing dearness of fuel in the Staffordshire district, and also to the probability of an increase in the price of branded iron which is thereby involved, with the generally resulting opinion that the coal supply is too abundant to allow of any general advance in prices being enforced. A watchful eye is also being kept by the local iron masters upon the North of England district, in order to observe the result of Messrs. Bolckow, Vaughan & Co.'s notice to terminate all their workmen's contracts on the 13th instant. This is generally interpreted to mean a further considerable reduction of wages—indeed, I may say that I have very high authority for stating that such is the case. As the men cannot very well resist, it is not in any marked degree improbable that we may shortly witness something of the sort in this district.

Pig iron has been fairly steady, but quiet, during the past week. I hear of several good lots of foundry numbers having changed hands at figures ranging from 59/ to 62/ per ton, delivered. Forge numbers are hardly so firm, and are not being largely sold. In some numbers of hematite pig irons there is a little more firmness; in fact, in at least one vendors, quotations have been put up 2/6 to 5/ per ton, although other numbers have been lowered. Ruling rates are now about the following: Millom Bessemer, No. 1, 80/; No. 2, 77/6; No. 3, 75/; "Ordinary" No. 3, 72/6; No. 4, 71/6; No. 5, 71/6; mottled, 80/, and white, 80/; the result of the revision in these prices is that No. 3 is 2/6 down; No. 4, 3/6; and No. 5, 3/6; whilst white is advanced 5/ per ton. Maryport "Hematite" No. 3 is 72/6; No. 4, 72/6; No. 5, mottled and white, 72/6; "Bessemer" No. 1, 80/; No. 2, 77/6; No. 3, 75/, all per ton, with the usual allowance. Most of the blast furnaces in connection with the larger Derbyshire and South Yorkshire iron works and foundries are in blast, but at one or two establishments, which are for the most part devoted to the making of merchant bars, the furnaces are out.

There is very little business doing in merchant iron at present, and such sales as are being effected are only productive of a margin of profit. Common bars can be had from about £8 to £8. 5/, medium at £9 to £9. 10/, and good Yorkshire £11 to £12. 10/. At one or two of the district works a few orders for hoop iron have recently been placed.

The Bessemer steel works are still in a comparatively inactive condition, the rail mills as a rule being, comparatively speaking, almost idle. The ordinary cast steel works are only indifferently employed, orders for this class of material being very few, and almost exclusively in respect of the best qualities of tool steel.

Edge tools of almost all kinds are still selling with remarkable freedom, our best customers being, as heretofore, Australia, New Zealand, Japan, India and the Cape. The West Indies are also taking from us special goods of this class, their requirements being occasionally very large.

There was a good deal of excitement on Wednesday, at the meeting of the shareholders of Messrs. G. & J. Brown & Co., Limited, Rotherham, owing to the peculiarly unsatisfactory nature of the report and balance-sheet for the past year. The report, which was of great length, amongst other details, stated that the sale and transfer of the Grange-land Colliery have been completed, but the original purchase of the colliery by the previous board of directors is said "to reflect no credit upon any of the parties concerned," and has caused a loss to the company of over £12,000. The loss sustained in the tire department up to the date of the last report having been £14,561, the manufacture of tires was stopped on December 31st last. The balance sheet showed that the loss sustained on trading during the year was £4164, making, with previous losses, £35,434, independent of the colliery transactions. I may say that the capital of the company is £125,000, in 1250 shares of £100 each. The present liabilities are £131,949, and assets £96,000.

The Hallemshire Steel and File Company have declared an interim dividend of 15/ per share, or at the rate of five per cent. The Retford Wagon Company have made a profit, but have devoted it toward the payment of a previous loss instead of declaring a dividend.

Two or three interesting mechanical improvements are reported. Cooper, Glossop & Co. have brought out an improved steam hammer, which will give a perfectly dead blow, there being two valves in the cylinder, one worked by the other, so as to keep the steam on all the descent, and may be worked from a low pressure boiler at 25 pounds to the square inch. In another case a patent has been taken out for sundry chemical improvements in steel making, and in a third instance the Saville Street Foundry and Engineering Company have brought out a pressure blower, of American invention, which, it is asserted, supersedes all blowing fans, inasmuch as it forces the air forward by means of a piston.

In the coal trade there is no quotable alteration, although prices of all classes of fuel have an unmistakable upward tendency. The steam coal owners are said to be desirous of shipping coal from Keadby, instead of sending it to Hull or Grimsby, as at present, and are trying to induce the railway company to lay down new sidings at the place first named.

The shareholders of the Albion Steel and Wire Company (Limited) also met yesterday at the Cutlers' Hall, Sheffield, for the purpose of discussing the recently issued directors' report and balance sheet, the latter showing a loss of about £74,000 in the four years' trading. After some discussion it was stated that as the debenture holders had agreed to accept 2½ instead of the usual 7½ per cent. for the present year, the directors would call up the remaining 30/ per share, which would probably enable the company to continue its operations with a fair chance of success.

A good deal of astonishment was created in business circles Thursday morning by the announcement of the failure of Messrs. Wallis, Campbell & Sales, of the British Steel and Iron Wire Mills, Tinsley, Sheffield, with liabilities stated at about £13,000. The concern was being advertised as a limited liability company, with a capital of £20,000, in 2000 shares of £10 each.

There is again very little news of interest in the various branches of the cutlery trade. I learn, as one item, however, that all the shares in George Wostenholm & Company (Limited) have been taken up very readily. The directors are all well known business men, so that the shareholders have some little guarantee for the future welfare of the concern. There is a fairly good demand for best cutlery, but common sorts are not sought after. The West Indian market and Australia are buying edge tools and special sorts of cutting and cultivating articles from us in tolerably large lots. The skate manufacturers are furbishing up their stocks with all possible haste, there being indications of an unusually severe and early winter. An astonishing quantity of really old fashioned skates is still sold every hard winter.

BIRMINGHAM AND STAFFORDSHIRE.

At the weekly 'change meetings last week, at Wolverhampton and Birmingham, the market ruled strong all round, pig iron having grown dearer by 2/6 to 15/ per ton. Finished iron is strong in proportion, but where advances in prices have actually been made they have been in respect of common and medium iron, the best qualities having as yet undergone no alteration. There was, however, an informal meeting of the sheet iron producers at Wolverhampton, on Wednesday afternoon, for the purpose of arranging an official general rise, but the gathering dissolved without anything definite being arrived at. There is, however, an informal advance of 10/ in thin gauges and of £1 per ton on gauges over No. 27. Speaking of the hardware industries the Birmingham *Post* thus reports: "The hardware and kindred trades of this district are not materially affected, so far, by the political and financial disturbing causes which are influencing other branches of industry; but the tendency of business, more especially in the shipping department, is unquestionably in a downward direction. With the exception of four markets—Australia, Brazil, France and the Spanish West Indies—the decline in our export trade up to the close of last month has this year been general, and it is still progressive. There has been a slight movement of late with Spain and the Argentine Republic; but, on the other hand, the falling off with the United States, Canada and other North American markets is on the increase. Fairly good indents for India are still coming to hand, gas tubing, glass ware, lamps, silver and electro plated goods, metallic bedsteads, machinery and plantation tools of all kinds being in especial demand. Some improvement has lately been experienced in the orders from the River Plate for cast hollow-ware, tin plate goods, tools and other articles adapted to immigrant wants; and Spanish requirements, which have throughout the year been heavy in the matter of machinery and mill work, are increasing, also, as regards general hardwares, and especially chandeliers, gas fittings, electro ware, metallic bedsteads, hollow-ware and agricultural tools. The cabinet brass foundry trade continues active, and an increasing demand is experienced for brass hinges, sash fastenings, door knobs, &c. Mediæval brass work for church fittings is also in brisk request, as usual at the approach of Christmas. In the lamp, chandelier, and gas fitting trades there is increasing activity. Iron plate workers are busy on buckets, coal scoops, coal vases, and frying pans, &c. Export orders for Brazil hoes and other classes of edge tools adapted to South American requirements are well sustained, and the makers of steel forks, hatchets, and most descriptions of steam and press tools, are very busy. Carriage iron work, and especially axletrees, is in good demand, both on home and colonial account. Tin plate workers and japanners are steadily employed on tea trays, teapots, lanterns, dish covers, &c. The electro plate trade is fairly active, and the demand for Britannia metal goods is well sustained."

SOUTH WALES—A BIG RAIL.

Trade in South Wales is dull and likely to remain so. Last week's exports were 1200 tons to Gothenburg, 900 to Landscrona, 200 to Chili, 160 to Antwerp—all from Cardiff. From Newport (Monmouthshire) there went 2100 tons to Rio de Janeiro At Ebbw Vale Works, last week, a rail was rolled which was 89 feet 7 inches in length and weighed 78 lbs. to the yard. It was one of an order which is being executed for the London Brighton and South Coast Railway. Tin plates are in better request with an attendant slight stiffening in quotations.

THE METAL MARKETS

were quiet during the whole of last week, with the exception of tin, in which a number of heavy transactions were entered into consequent upon the news of troubles in the Malay Peninsula. Messrs. Von Dadelszen & North say that "the market remains very quiet, and metals, with the exception of tin, show little change. Bank rate remains at 4 per cent. *Iron*—No improvement, either in price or demand. Scotch pigs declined to 60/, cash, closing at 60/6. The shipments last week were 10,531 tons, against 9,719 tons for corresponding week last year. *Copper*—Very little has been done; Chili bars sold to a small extent, at £82 to £82. 10/, the last sale of g. o. b. being at £82. A large sale of direct import to France is reported from Paris. Wallaroo, £91 to £91. 10/; Burra, £89. 10/ to £90; English, no change. *Tin* early in the week was flat, and Straits sold at £83. 10/; but on the news of the disturbances in the Malayan Peninsula becoming known, a reaction set in, and with large transactions prices have advanced to £85. 10/ to £86 for spot parcels, and also to arrive, and for forward delivery. Australian has improved in like manner, from £81. 10/ to £83. 10/. In Holland Banca was done at 51 fl., but has improved to 53fl. Billiton, 50 fl. to 51 fl. The next sale of Banca is advertised for the 30th inst., and will consist of 23,000 slabs, English tin.—The standards were reduced £4 on Monday, and metal reduced £2 per ton, but yesterday this reduction was withdrawn; and smelters are cautious sellers at their old prices; common ingots quoted £83, bars £89. Tin plates in moderate demand; prices still very low. *Lead* has been quiet; good soft English pig quoted £21. 17/6 to £22. In Spanish silver lead a sale was reported at £21. 7/6. *Spelter*—Silesian is almost nominal, £25; hard English sold at £20. *Quicksilver*—Rather more doing, last quotation, £9. 10/ per bottle."

The *Mining Journal* says:—"*Copper.*—On Tuesday the smelters made a reduction of £1 per ton in the fixed rates of manufactured, making the present price of Indian sheets £95, but at this figure it does not appear many orders can be obtained; the market is not only quiet for English descriptions, but extends likewise to foreign. Chili bars are easier, and it would be difficult to realize over £81 to £81. 10/ for common brands. *Lead.*—This metal remains quiet and prices are easy. Prices have come down to a point which may enable buyers to place out a few orders, but there is nothing particularly favorable to induce any large amount of business. At the same time sellers think it may not be necessary to make any further reduction at present. *Steel.*—In foreign there is an increased inquiry, but Swedes is held at rather too high a value to allow of much being sold. *Tin-Plates.*—Some makers are pretty well off for orders, but others are less fortunate, and are still willing to sell at former rates. *Quicksilver.*—As intimated last week, the price of this article, although greatly reduced to what it was, yet remained too high to meet buyers' limits for orders in hand, and sellers have very wisely consented to submit to a further reduction. On Monday a few small sales were effected at £10, but on Tuesday and Wednesday £9. 10/ was taken. The price is now more reasonable, and an improved inquiry will, no doubt, soon follow should the price remain more uniform than lately. As the fluctuations are mostly 10/ to 20/ per bottle, it becomes a serious matter to shippers if they unfortunately make a purchase at the top price, and the demand would return quicker, providing some assurance was given by importers that no further reduction would take place for a month or so. At £9 we think a large business might be done. Importers have advanced their prices again to £10. *Tin.*—The smelters lowered their fixed rates £3 a ton, but since then they have modified the reduction to £1 only; Contrary to general expectation the foreign market this week has undergone a complete change, owing to the news from Penang being viewed unfavorable for the future supply of Straits, which has occasioned some excitement among speculators, and a successful effort has been made to arrest the downward tendency of prices—nay, more, it has resulted in an actual rise."

Messrs. J. Berger, Spence & Co. say (today): "The copper market has been dull, prices remaining stationary. Tin transactions during the week have exhibited a slight movement in favor of sellers. The position of the lead market is unaltered; prices, however, show a downward tendency. Dealers in spelter are firmly maintaining the late improvement."

Latest Liverpool prices are:

Iron: f. o. b. in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Merchant bar	7	17	6	@ 8	5	0
Merchant bar, in Wales	7	7	6	@ 7	15	0
Staffordshire	8	10	0	@ 11	15	0
Hoop	9	10	0	@ 10	15	0
Sheet	11	10	0	@ 11	15	0
Nail rod	8	10	0	@ 9	0	0
Bar, best crown	8	10	0	@ 8	15	0
Boiler plates	11	0	0	@ 12	9	0

Tin Plates: f. o. b. in Liverpool, per box.

	£	s.	d.	£	s.	d.
Charcoal, I. C	1	7	0	@ 1	10	0
Coke, I. C	1	2	6	@ 1	4	0

Copper: Delivered in Liverpool, per ton.

	£	s.	d.	£	s.	d.
Bolt and Sheathing	97	0	0	@ 0	0	0
Tile	90	0	0	@ 0	0	0
Tough cake	90	0	0	@ 0	0	0
Best selected	93	0	0	@ 0	0	0

A Gramme magneto electric machine has for some time been employed for supplying light at the Houses of Parliament in London, and an idea of its power may be gathered from the fact that it is worked by a steam engine at a distance of 480 feet from the point at which the light is produced, the current being conducted thither by copper wires 1-16 of an inch in diameter. The magnets in the machine are arranged upon three massive rectangular blocks, and make 380 revolutions per minute, at an expense of 2½ horse-power, and give a light equal to over 3000 of the English standard candles.

Mine Disasters in the Anthracite Districts.

A communication from Wilkesbarre, Pa., under date of the 28th ult., brings the following intelligence:

The most extensive and serious mining casualty ever known in the Wyoming Valley has just occurred, and seems to be still progressing at the Chauncy and Grand Tunnel Mines, between Plymouth and Nanticoke, about two and a half miles south of the former place. About two weeks ago Mr. Roberts, one of the proprietors of the Chauncy Mine, noticed that the roof of the opening was working in a most extraordinary manner, indicating that inside operations were attended with considerable danger to those engaged in digging coal in the different chambers or employed in the various gangways. He watched the phenomenon with the greatest interest, and was finally convinced that the mine was doomed to certain calamity. About 11 o'clock in the morning of the 19th inst. he gave orders for the men to leave the mine as soon as possible, and remove as much of the company's property as could be taken out on the spur of the moment. The miners, to the number of 125, left their work at 12 o'clock, taking with them their implements of their calling, and two hours later the mine caved in.

Had it not been for the caution and foresight of Mr. Roberts, a most fearful loss of life must have occurred, as the whole number of miners would have been entombed by about 40 acres of rock which crushed down and filled up the honey combed opening beneath.

The disaster extended to Grand Tunnel Mine, adjoining the cave, it seeming to drag over the roof in a southerly direction until stopped by a huge wall of rock known to mining engineers as "a fault," which raised up between the Grand Tunnel and the adjacent mine, operated by the Susquehanna Coal Company. In the Grand Tunnel some 60 or 70 acres of rock have been hurled, effectually closing operations for months to come. The whole fall, it will be seen, embraces over 100 acres, and the damage to the mines is estimated at over $100,000. Several hundred miners have been thrown out of employment just at the time when it is most essentially important for them to be at work. The effects of the cave-in were truly terrific. Huge boulders were thrown out of the mouth of the tunnel by the compressed air as if they had been pebbles, and the shock of the crash was like an earthquake. The hollow chambers re-echoed the dismal sounds, and, taken altogether, the scene was one calculated to intimidate the heart of the hardiest miner in the land. The dissolution of the mountain appears to be still going on, and there is no predicting how much more desolation is to ensue in that quarter.

The Chauncy Mine is operated by Messrs. Albright, Son, Roberts & Co., and the grand tunnel is under the control of the Susquehanna Coal Company. One or two cavings in of mines have taken place in other parts of the valley during the past two weeks, and from the peculiar coincidences in the matter, the idea is gaining strength that the casualties are the result of a slight earthquake which passed through the valley in a northeasterly and southwesterly direction.

The Casson-Dormoy Furnace.

THE EARL OF DUDLEY'S ROUND OAK OFFICES,
BRIERLEY HILL, 5th November, 1875.

To the Editor of The Iron Age—SIR: My attention has been called to an article headed "Varied Results with Rotary Puddlers," that appeared in your issue of the 16th September last, in which you refer to a puddling furnace worked by machinery at the Northfield Iron Works, Rotherham, erected by M. Dormoy, and to not dissimilar furnaces at the Round Oak Works of the Earl of Dudley, being a double furnace, worked with a tool actuated by machinery and giving excellent results.

I take this opportunity of stating that the furnace in question has been patented by me in the United States, and is known in this country as the "Casson-Dormoy" Puddling Furnace. As compared with the old puddling furnaces, previously at work at the Round Oak Works, it is effecting a saving of 50 per cent. in fuel, 75 per cent. in fettling, 1/6 per ton in bricks and castings, doubles the puddler's pay without increasing the rate per ton, and reduces considerably the number of "under-hands" required in a forge. Each furnace yields from 30 to 40 tons of iron per week, so that the number of furnaces required in a forge is reduced by two-thirds. It requires a personal and practical inspection of the furnace to understand thoroughly the scientific principles upon which the furnace is constructed, and which I shall be happy to show any American iron masters visiting Great Britain.

Beside the works mentioned in your article as having adopted this system, the Wigan Forge Rolling Mills Company have decided to construct the whole of their forges on the Casson-Dormoy principle, and I expect they will be in operation in about six months.

Trusting that you will favor me with the insertion of this letter,

I have the honor to be,
Your obedient servant,
R. SMITH CASSON.

Fire at the Crane Iron Works.

The Catasauqua, Pa., *Dispatch*, of the 27th inst., contains the following:

On Monday evening last, about 11:30 o'clock, our people were aroused by the steam whistles on the Crane Iron Works, and the cause was soon apparent. A great noise was heard and volumes of smoke and flame were pouring up from the large blast engine house. The engineer in charge of those monster machines discovered a fire in the second gallery of the building, and at once assistance was summoned, hose attached to the dummy engines on the ground floor, and a strong stream directed upon the burning mass, when the hose bursted, and before another could be obtained the flames spread. The oil saturated wood soon became ignited, and in an instant the whole building was enveloped. The large engines were still in motion and continued to force blast into the furnaces, but the rarified air soon had its effect, and the pipes bursted with great noise, sending heavenward immense clouds of flame, smoke and sparks. Still the engines continued to force the air through the broken pipes, making a thundering noise and rattling all the windows in the town, startling the people greatly. In some houses flower pots were shaken from brackets, and in others the occupants thought they were about to be visited by a California earthquake. The noise continued until the falling in of the roof of the building, when the steam connections were severed and the receiver carried down with the falling mass. The engines then ceased motion, and the fire burned without being fanned. It was thought the building was almost fire-proof, but the two wooden galleries added fuel to the flames. The Phœnix and Southwark engines were soon on hand and at work, but confined their efforts to save the surrounding buildings. The Phœnix took position at the Crane Iron Company's canal and poured two steady and strong streams upon the fire until extinguished. The Southwark burst a flue soon after being placed in service, and was almost useless thereafter. By midnight, the building was a mass of ruins, and the magnificent engines—amongst the largest in the United States—were a blackened mass. These machines were a pride to our place, and no visitor was allowed to depart without having first visited them in motion. The first was erected in 1856 and the second in 1866, and had a capacity of 2000 horse-power each. The building was erected after the machines were set up, and was a large four story structure, surrounded inside with two wooden galleries, upon which visitors could view the machines at different hights. The roof was of the truss construction, and covered with tin, upon which was an observatory and flag staff. At the falling in of the roof, the blast pipes of Nos. 4 and 5 furnaces were servered, and a dilemma arose to continue them in use. Boiler makers were put to work at once, and in a few hours blast was put on No. 5, and by evening the next day No. 4 was supplied. Three smaller blast engines were placed in operation, connections made, and no serious damage resulted. The next morning laborers were at once placed at work clearing away the debris and the rebuilding will be prosecuted to a successful end. By Christmas it is contemplated to have the building completed. The engines are not seriously injured, and can soon be placed in working order. The large receiver will be the heaviest loss, as it is a total wreck. The loss by the fire will be between $10,000 and $12,000.

The Coal Combination.

The Philadelphia *Ledger* says: A special meeting of the Schuylkill Coal Exchange was held in this city on the 8th ult., when it was determined: First, to hold a stated monthly meeting of the Coal Exchange to fix "line" prices, and that all members having any knowledge of any other members violating the rules and by-laws of the association be requested to make public such information, with the names of the parties; second, that an expert be employed, upon the request, in writing, of any member, charging another member with underselling, &c., to examine the books of the member so charged, and to report the facts; third, the books of the selling agents to be subjected to like examination; and, fourth, that the members of the Coal Exchange will discharge any agent who may divide his commission with any purchaser or in any manner sell coal in violation of the by-laws. One of the effects of the large over-supply at almost all the coal centers is to break the combination of the great coal carriers that has governed and regulated the trade for the past three years. A weak point here and there will discover itself among the operators, and an abatement from the agreed upon prices will be accepted, and justification attempted on one pretext or another, which proving unsatisfactory, rival interests will seek to be even by a still greater reduction in prices. At least these are allegations, and, if true, they are but natural. A combination to effect a given object, like an endless chain, is no stronger than the weakest link composing it. The only remedy, therefore, against the threatened rupture of the coal combination is to remove the cause pointing to that result. The present overstock of coal, which is said to be larger than ever before, must be by some practical operation lessened.

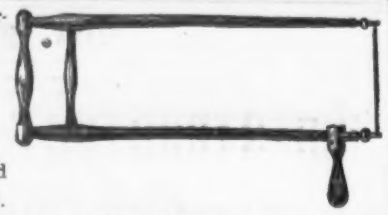
A Proposed Marine Ram.—Commodore Ammen, chairman of the Bureau of Navigation, has submitted to the Navy Department plans for a marine ram. The vessel will be 175 feet long, with thirty feet beam, exclusive of three feet of sponsons on each side; 40 feet each side of midships will be symmetrical; beyond this the ends will taper, enclosed by parabolic curves, fore and aft. The projection forward will be a casting of tempered steel, having a solid end; but having inside a hollow cylinder with radiating flanges cast around it, to which the girders will be riveted. The vessel will be covered with an outer and an inner plating of iron. The pilot house will be a small turret of six inch steel plates, six feet high above the crown of the vessel, projecting two feet below and enclosing the smoke stacks to protect them. The total weight of the ram will be 804 tons; displacement, 1275 tons. With a velocity of twelve knots an hour, it can give a blow of 7920 tons.

The following item from an English exchange shows that the English railway managers are beginning to appreciate the value of simple and durable power breaks: "The directors of the Metropolitan Railway Company have decided to adopt 'Smith's Vacuum Brakes.' These brakes have been in use on the St. John's Wood line since June, 1874, and having been thoroughly tested and found in every way to work satisfactorily (more than 200,000 stops have been made with them), they have now been applied to the whole of the Company's trains, and have been in full operation since the 4th inst."

We wish to call the special attention of merchants to this

PATENT

BRACKET SAW FRAME.



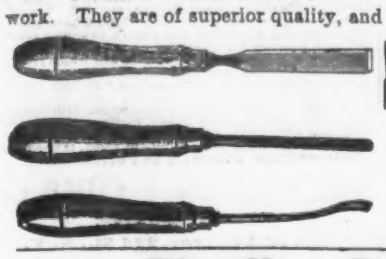
We have never before made anything which sold so readily, and gave such universal satisfaction. Where one is sold in a neighborhood, it makes a demand for many more. We have now sold 40,000 of them and have not yet heard one complaint, but we have a large number of letters expressing great satisfaction with them. We have advertised them largely and thereby created a demand in every part of the country.

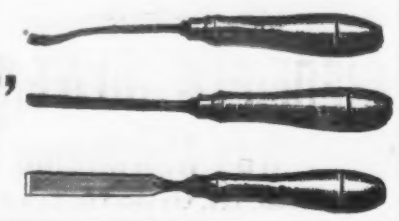
The list price of Rosewood Frames is $1·25 each, and of Birch $1·00 each, with the same discount that we make on our Barber Bit Braces. Price of Saw Blades, $1·20 per gross net.

We also make sets of

CARVING TOOLS.

Price of the three tools in nice paper box $1·00, discount 25 and 10 per cent. to the trade. These tools are sharpened and fitted for work. They are of superior quality, and sold at a lower price than imported tools.



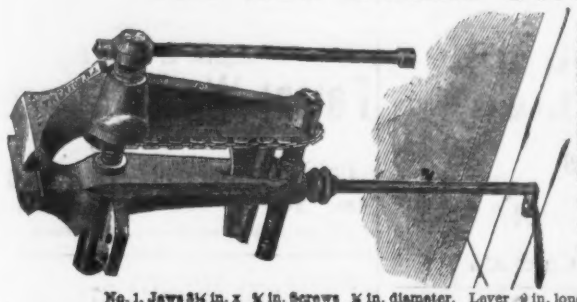


Millers Falls Co.,

No. 78 Beekman Street,

NEW YORK.

The New Double Screw Parallel "Leg" Vise.



We are now ready to furnish, as the result of more than thirty years' experience, our latest style of Vise—the best yet made. It is **stronger** than any other, whether of Foreign or of American make; always parallel and holding with a tighter "grip." The jaws are of convenient shape for the workman to get near his work equally well for filing or chipping, instead of the heavy, clumsily formed jaws of the cast iron Single Screw Vises of the common "parallel" type, and which, depending upon slides alone for preserving parallelism, can never be screwed up very hard without "jamming" on the slides or breaking.

Our New Vise combines all the advantages of the "Peter Wright" Leg Vise, of strength and lightness, fastening to the floor and bench, and at the same time greatly superior to it; is always perfectly parallel at all points of opening, and never gets out of line. Embodying the same general principle as the well known Chain Vise, so long made by us, we have by new, scientific proportioning of all the parts, and with our recently improved metals for their manufacture, obtained so perfect a tool, that we now *warrant* these Vises for *three years* from date of manufacture stamped upon each.

The Jaws are of best Tool Cast Steel, welded on, file cut and properly hardened. The screws are forged of the best refined iron, and work in *solid cut thread* boxes.

The lower screw maintains the parallel position of the two jaws, by having exact motion with the upper working screw through the connecting chain which regulates it.

The chain is very accurately made of steeled links and rivets, and having no strain of the work upon it, is therefore as durable as all the other parts.

Prices with Special Discounts to the Trade.

No. 1,	Jaws 3¼ in. x ⅝ in.	Screws	⅝ in.	diameter.	Lever	9 in.	long, Opens 4¼ in. $6 00
" 2,	" 4¼ in. x 1 in.	"	1⅛ in.	"	"	13 in.	" " 5¾ in. 11 00
" 3,	" 5¾ in. x 1⅜ in.	"	1¾ in.	"	"	16 in.	" " 6¾ in. 17 00
" 4,	" 6¾ in. x 1¾ in.	"	1¾ in.	"	"	19 in.	" " 7¾ in. 23 00
" 5,	" 7 in. x 1¾ in.	"	1¾ in.	"	"	24 in.	" " 9 in. 30 00
" 6,	" 8 in. x 1¾ in.	"	1¾ in.	"	"	34 in.	" 10 in. 44 00

All sizes of these Vises furnished with Swivel Attachment, at an additional cost of $1 to $3. Sold at the General Agencies.

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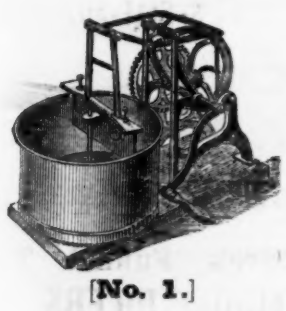
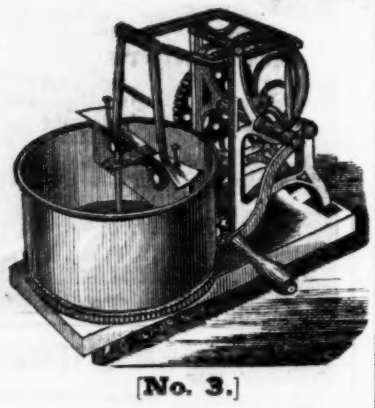


[No. 1.]

[No. 5.]



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☞ More than 60,000 are now in Use.

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No. 2,	Large Family Size		$ 9 00
No. 2½,	Hotel or Bakers' Size	12 00	
No. 3,	Farmers' Sausage Cutter		15 00
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No. 5, Large Butchers' Size ..... $75 00.

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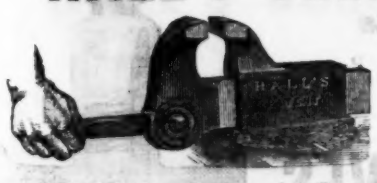

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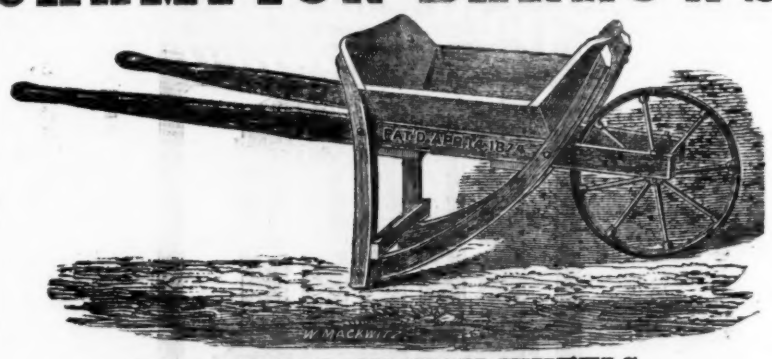

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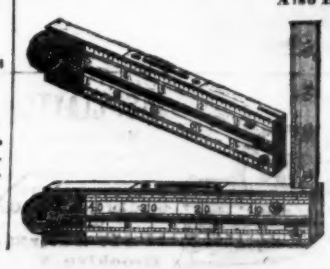

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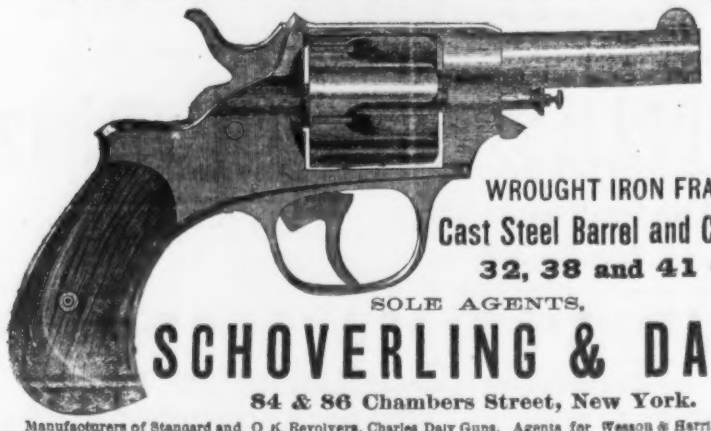

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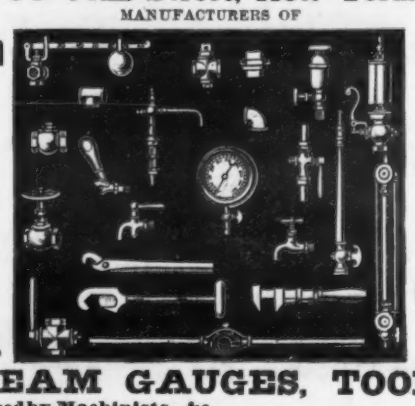

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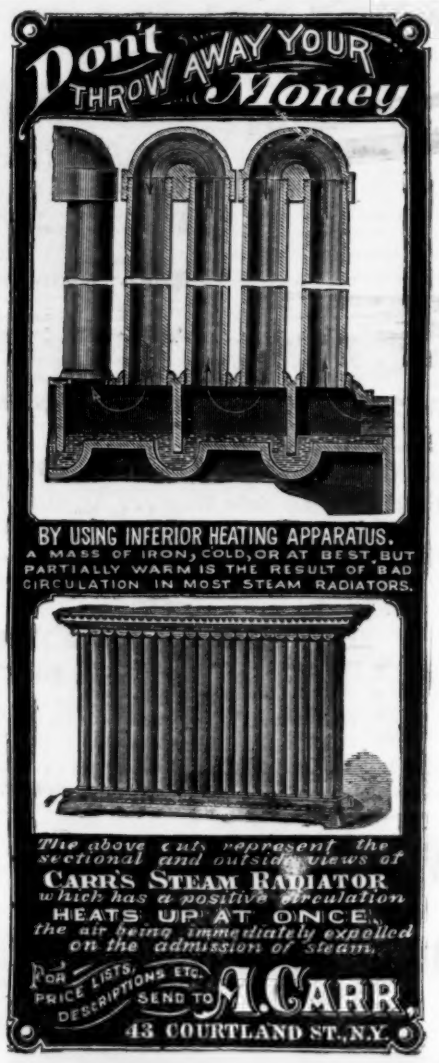

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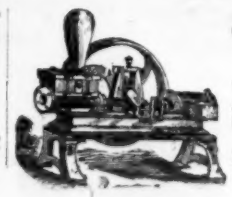

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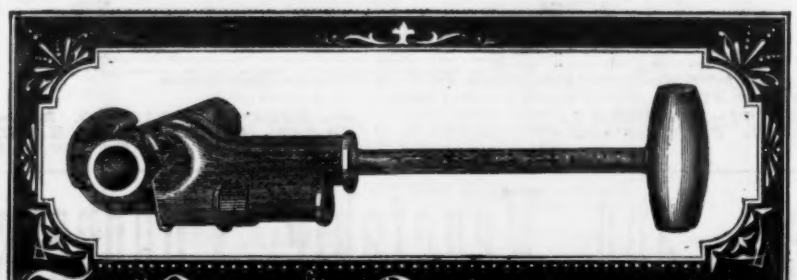

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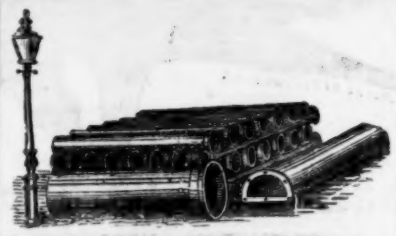

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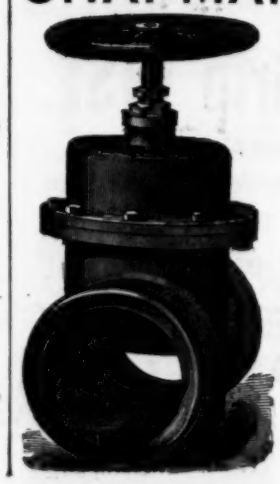

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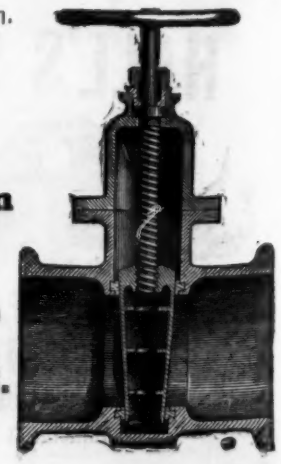

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and Index to Advertisements.

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The best self-closing Hinge, as shown when door is shut—both sides alike with four combination springs.
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Articles of every description made to order short notice, and in a very superior manner.
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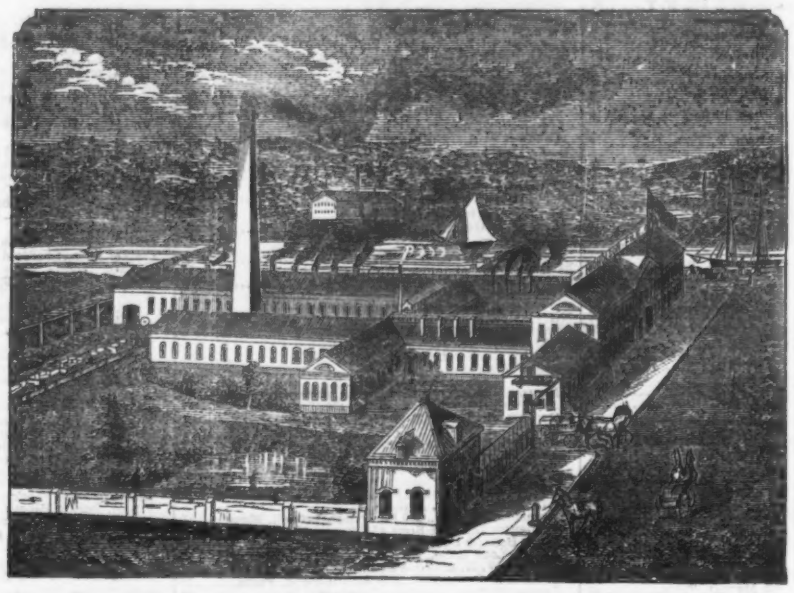

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First.—They are made from the best quality of File Steel.

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The largest stock of Fire Brick of all shapes and sizes on hand, and made to order at short notice.
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Manufacturer of
FIRE BRICK,
For Rolling Mills, Blast Furnaces, Foundries, Gas Works, Lime Kilns, Tanneries, Boiler and Grate Setting, Glass Works, &c.
FIRE CLAYS, FIRE SAND, AND KAOLIN FOR SALE.

NEWTON & CO.,
Successors to
PALMER, NEWTON & CO.,
ALBANY, N. Y., Manufacturers of
FIRE BRICK
Stove Linings,
Range and Heater Linings
Cylinder Brick, &c., &c,

M. D. Valentine & Bro
Manufacturers of
FIRE BRICK
And Furnace Blocks,
IN ALL ITS BRANCHES.
Woodbridge, - - - N. J.

National Fire Brick & Drain Pipe W'ks,
CHAS. ANNESS & SONS, Props.,
Manufacturers of **FIRE BRICK** all shapes and sizes.
Miners and Shippers of all kinds of **FIRE CLAY.**
Factory at SPA SPRINGS, on Perth Amboy and Woodbridge, R. R.
Post Office address, *Woodbridge, N. J.*

TROY STOVE LINING
AND
Fire-Brick Works.
BELL & BACON.
Stove Linings a Specialty. **TROY, N. Y.**
JAS. C. BELL, JR. J. BLUNT BACON.

Established 1845.
WOODBRIDGE, N. J.
Fire Brick Works.
WM. H. BERRY & CO.
Manufacturers of all forms and sizes of **FIRE BRICK,** for Blast Furnaces, Rolling Mills, Gas House and Oven Tiles, and Stove Linings, made to order. Also, Fire Clay, Kaolin, Sand and Fire Mortar.

COX & COX,
Counsellors at Law,
229 Broadway, NEW YORK.
Practice in cases relating to
PATENTS and TRADE MARKS.
Before the
Courts and Patent Office.

A. H. SPENCER,
Solicitor of Patents,
And Expert in Patent Cases.
28 State St., Room 19, Boston.

HOWSONS'
OFFICES FOR PROCURING
UNITED STATES AND FOREIGN
PATENTS,
Forrest Buildings
119 SOUTH FOURTH ST., PHILADELPHIA,
AND MARBLE BUILDINGS
605 Seventh St. (Opposite U. S. Patent Office,
Washington, D. C.
H. HOWSON, Solicitor of Patents. | C. HOWSON, Attorney at Law.
Communications should be addressed to the
PRINCIPAL OFFICES, PHILADELPHIA.

FRANCIS C. NYE,
Counsellor at Law,
13 Murray St., N. Y.
PATENT CASES
brought or defended in any district of the U. S.

SOLICITS | W. E. SIMONDS, Att'y at (Patent) Law. | PATENTS
In the U. S. and abroad, with special aim to strength and validity, and in shortest possible time. Pamphlet free. 345 Main St., Hartford, Conn.

CROOKE & CO.,
MANUFACTURERS OF
WROUGHT IRON BUTTS,
All our goods are manufactured from patent faced iron plates; they have a smooth face and bright finish.
163 & 165 Mulberry Street, New York.
FERNALD & SISE, Agents, 100 Chambers Street, N. Y.

Burke & Fraser,
SOLICITORS OF
PATENTS
37 PARK ROW, N. Y. CITY.
Established 1851. *Also Consulting Engineers.*

PATENTS.
Thomas D. Stetson, No. 22 Murray St., N. Y. Solicitor of Patents, and Scientific Expert in patent cases.
Send for circular.

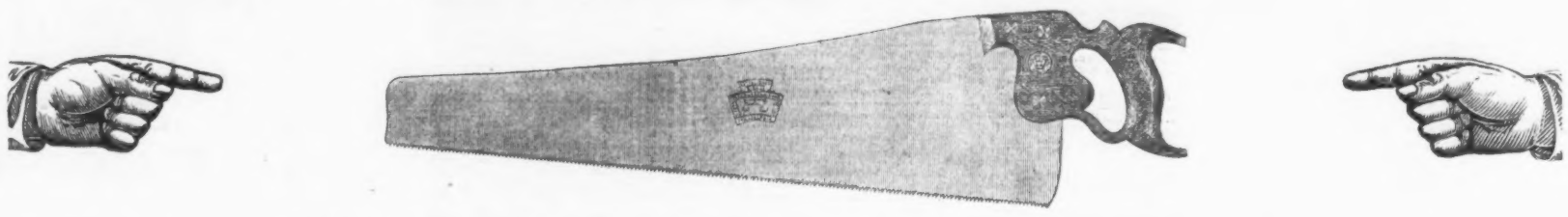
HENRY DISSTON & SONS,

Keystone Saw, Tool, Steel and File Works.

Front and Laurel Streets, Philadelphia.

Henry Disston & Sons New Patent Skew Back Hand Saw

"CENTENNIAL No. 7."



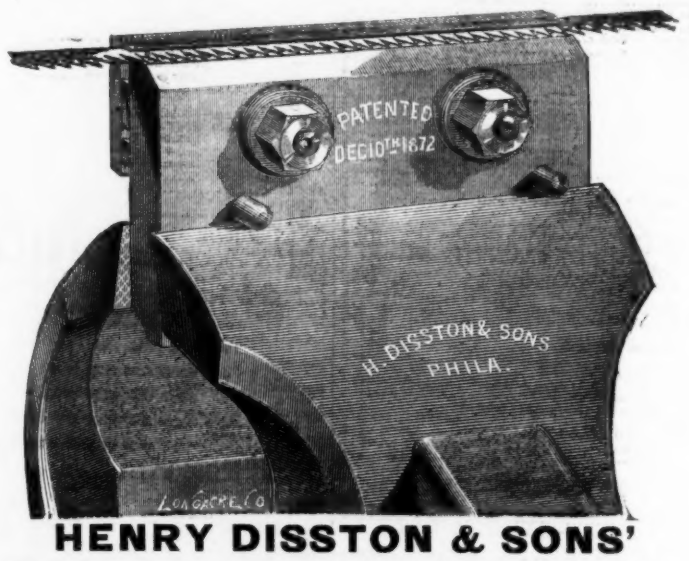
TO THE HARDWARE TRADE.

GENTLEMEN: We are prepared to supply the trade with an entirely new Hand Saw, called the "Centennial No. 7." This Saw is ground on the back, to taper gradually from butt to point, being only 26 gauge at the point. By this mode of grinding, the Saw, when tested, makes a complete "whip bend." The handle is apple-wood, oil finish, the screws are flush and polished, and the Saw is superior to any ever offered to the trade in this or any other country at the price. It is the sweetest-cutting, nicest-hanging Saw that can possibly be manufactured, feeling as light as a feather at the point, owing to its peculiar construction. The screws are finished before being put into the handle, and, should they become loose, can be readily tightened with an ordinary screw-driver, and still make a good finish. It was our intention to keep this Saw from the market until Centennial year; but second thought has decided us to give the trade an opportunity to test it before then, that they may know whether they can put it in stock without risk. The price of this Saw at present will be the same as that of the regular No. 7. It is a "hard times" Saw, and we do not know how long the price can be sustained. Mr. Henry Disston is willing to risk his reputation as a Saw-Maker upon "the Centennial No. 7." Send for samples and put them in the hands of the Carpenters—to be returned if not as represented.

November, 1875.

GAUGE SAWS, "HAND AND BACK."

The accompanying engraving represents our Patent Gauge Saw, which is an invaluable improvement where a fixed and definite depth of cut is required. For Tenoning, Shouldering, Dovetailing, Curving, Cog-Cutting, etc., it is just the tool. We manufacture them in both Hand and Back-Saws. Remove the gauge from the Hand-Saw and it can be used for any of the purposes to which a Hand-Saw is adapted.



HENRY DISSTON & SONS'
Patent Setting Stake

For Setting Web, Jig, Band or any kind of Narrow Saws.

The principal difficulty experienced in setting a narrow Saw arises from the fact that the blade is liable to tilt or slide backward as each successive tooth is struck by the hammer. The back guide with its projecting lip, under which the Saw passes and is securely held during the process, effectually prevents these difficulties and holds the Saw up to its work; thus the operator is enabled to strike the tooth with certainty every time, and prevents any distorting of the saw blade.

The guide can be adjusted to various widths, by inserting or removing packing, as occasion may require. Either edge of the set can be used by reversing the back guide, and as the edges are of different sizes, they are adapted to Saws of different widths. A narrow Saw set by the aid of this Stake remains as straight after as before; a result which cannot be attained by any other means.

DOUBLE HANDLE FRAMING SAW.

The advantages of a Framing Saw with a handle at each end are numerous. It can be used by either one or two men. It is particularly adapted for framing. The handles are so constructed that both hands can be used at either end. The thrust is on a line with the cut, and the back of the blade is peculiarly formed. The combination of these principles makes this a very light and easy running Saw.

STANDARD WIRE GAUGE.

Perfection Attained. Accuracy Guaranteed.

For the past forty years we have had constant trouble with various kinds of so-called Standard Gauges, and have failed to find one in every ten which could be relied on for accuracy. We have repeatedly sent special orders to both English and American makers, but have failed to obtain them true to the required standard.

To insure perfect accuracy, it is absolutely requisite that our gauge and that of our customers should be alike, and to this end we have been compelled to enter the field in this delicate branch of manufacture. Our success is complete, and we are making a correct Standard Gauge which we warrant, and sell at a lower price than the English.

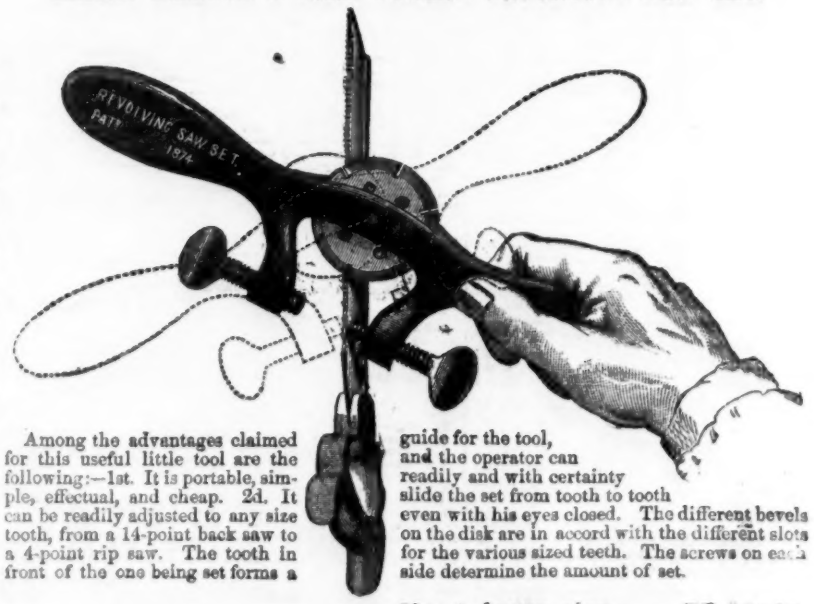
Price for Small Gauges, Nos. 1 to 26, - - - - - - $1·75.

Price of Large Gauges, Nos. 0 to 36, - - - - - - $2·50.
Special Gauges, Special Prices.

We make them to order in different series of high or low numbers, as the various branches of industry may require. For instance, when the articles to be gauged range between Nos. 0 to 10, the purchaser need not be put to the expense of a gauge running up to No. 36, when most of the numbers will be of no use to him.

Where one or more numbers are being constantly used, they wear away faster in proportion, in which event we recommend that duplicate incisions of each of the most used numbers be made in each gauge.

HENRY DISSTON & SONS' PATENT REVOLVING SAW SET.



Among the advantages claimed for this useful little tool are the following:—1st. It is portable, simple, effectual, and cheap. 2d. It can be readily adjusted to any size tooth, from a 14-point back saw to a 4-point rip saw. The tooth in front of the one being set forms a guide for the tool, and the operator can readily and with certainty slide the set from tooth to tooth even with his eyes closed. The different bevels on the disk are in accord with the different slots for the various sized teeth. The screws on each side determine the amount of set.

No. 1, large size, - 75 cents.
" 2, small " - 50 "

HENRY DISSTON & SONS, Front and Laurel Sts., Philadelphia.

New York Wholesale Prices, December 1, 1875.

HARDWARE.

Anvils.
Wright's........℘ ℔ gold 10½c; over 250 ℔s 11c, gold
Armitage's Mouse Hole..........gold 11c
Wilkinson's..........℘ ℔ gold 11c
Eagle Anvils (American)..........℘ ℔ 10c dis 20 %

Apple Parers.
Domestic, Turn Table, Lightning, Hudson's, Reading, Union......} $7.75 ℘ doz
Skeleton Paring, Coring and Slicing......$3 00 ℘ doz net
Bay State, Paring, Coring and Slicing......$15 00 dis 10 %
Climax Slicer......8 00

Ash Sifters.
J. E. Corning's Barrel Head......dis 10 %
Rival......℘ doz $12·00 net
Square......per doz $2·50 dis 20 %

Augers and Bits.
Conn. Valley Mfg. Co., Douglass, Ives, Beecher (French, Swift & Co), Griswold, Challenge......} 1st quality.....dis 40&10 %
Nobles Mfg. Co......dis 40 @ 40&5 %
Cook's......dis 40&10&10 %
Diamond Hardware Co......dis 25&10&10 %
Snell Mfg. Co......dis 25 %
Jennings' Bits......dis 10 %
Lewis' Single Twist Bits......dis 30 %
Andrews' Bits......dis 25 %
Griswold's Patent Bits......dis 30 %
Expansive Bits, Clark's....small, $18; large, $26—dis 15 %
" " Ives'......$30 @ $30—dis 30 %
" " Blake's......$30—dis 40 %
Hollow Augers, Douglass', Ives', French, Swift & Co......} dis 40 %
" " Bonney's Adjust..℘ doz $48—dis 25&10 %
" " Stearns' " ..℘ doz $48—dis 25&10 %
" " Ives' Expansive......each $4·50—dis 40 %
" " Universal Expansive.each $4·50—dis 10 %
Gimlet Bits—Screw, $7·50; no screw, $9......dis 20&10 %
Double Cut Gimlet Bits, Shepardson's......dis 30 %
" " Ct. Valley Mfg. Co..dis 30&10 %
" " Hartwell's......dis 50 %
" " Douglass'......dis 25&10 %
" " Ives'......dis 30 %
Morse's Bit Stock Drills......dis 20 %
L'Hommedieu's Ship Augers......dis 20 %
Watrous Ship Augers......dis 20 %
Vaughan's Post Hole—
6 in., $38 60; 7, 8 and 9 in. $25 per doz......dis 20 %

Awls, Brad Sets, &c.
Awls, Sewing, Common......per gross $1·20—dis 15 %
" " Best......per gross $1·60—net
" Shouldered Peg......per gross 2·25—dis 15 %
" Patent Peg......per gross ·60—dis 15 %
" Shouldered Brad......per gross 2·25—dis 15 %
Brad Sets, Aiken's......per doz $14·40—dis 25&10 %
" No. 42, $10·50; No. 43, $12·50......dis 45&10 %
" Clark's......dis 40&10 %
" Stanley's Excelsior......$18 50—dis 25&10 %

Axes.
Brook's......per doz $12 00 @ 14 00 net
Blood's......per doz $15 00 @ 16 50—dis 20 %
Hunt's......℘ doz $12 50 @ 14 00
Collins'......℘ doz 11 00 @ 15 50 net @ dis 5 %
B. Clark's (J. C. W. & Co.) bron'd or red.℘ doz $10 00 net
Hurd's......℘ doz 10 50 @ 12 50
Simmons'......℘ doz 11 00 @ 11 50
Morris'......℘ doz 12 50 @ 13 50
Red Jacket......℘ doz 12 00 @ 12 50
Mann's......℘ doz 11 50 @ 13 00
" Double Bitted......℘ doz 21 50 @ 22 00
Underhill's......℘ doz 12 00 @ 13 00
" Crown......℘ doz 12 50 @ 13 50
John Leverett's......℘ doz 12 50 @ 15 50
Ten Eyck......℘ doz $10 50 @ 12 50 net
M. H. Jones & Co......℘ doz 10 50 @ 11 50 net
Nobles Mfg. Co......per doz $10 50, net
Elephant......per doz $10 50 @ 11 50 net
Axle Grease.—Frazer's......℘ ℔ 6c.
Balances......dis 35 %
Bands.—Plated......new list dis 50&5 %
Iron Rim......new list dis 25&5 %
Brass (Plated list)......new list dis 50, 10&5 %
Oroide......new list dis 50&5 %

Bells.
Hand, Light Brass......dis 70&10 %
" Extra Heavy......dis 40&10 %
" White Metal......dis 50&10 %
" Silver Chime......dis 20&10 %
" Swiss......dis 25 %
" Globe (Cone's Patent)......dis 20&10 %
Gong, Abbe's......dis 20&10 %
" Yankee......dis 35&10 %
" Barton's......dis 35 %
Crank, Taylor's......dis 25 %
" Brook's......dis 50 %
" Cone's......dis 10 %
" Connel's......dis 50&10 %
Lever, Sargent's......dis 60&10&10 %
" Taylor's......dis 25 %
" Hart, Bliven & Mead Mfg. Co......dis 50&10 %
Pull, " " " "......dis 50&10 %
" Brook's......dis 50 %
" Western......dis 25 %
Call......dis 15 %
Cow—Common Wrought......dis 20&10 %
" Western......dis 20&10 %
" " Sargent's......dis 50&10&10 %
" Kentucky "Star"......dis 20&10 %
" " Sargent's......dis 50&10&10 %
" Dodge's Genuine Kentucky, new list—
Nos. 0 1 1½ 2 3 4 5 6 Hog.
$12·00 10·00 9·00 8·00 6·00 5·00 3·50 2·50 5·00—dis 45 %
" Yaw's Genuine......dis 35 %
" Texas......dis 35 @ 40 %

Bellows.
Blacksmiths', Common, List of Sept. 15......dis 15 %
" Extra and Pittsburgh Pattern......List net
Moulders'......dis 20 %
Hand Bellows......dis 10 %
Blind Adjusters.—Domestic......℘ doz $8—dis 20 %
Blind Fasteners.
Mackrell's......dis 30 %
Van Sand's, No. 3000, $14·00; No. 3705, $10·50.net @ dis 5 %
Washburn's Patent......℘ gross $14·00 dis 5 %
Merriman's......new list net
Blind Staples.
Boardman's Patent, ⅜ in. and larger......℘ ℔ 37 c
" ⅝ in......" 42 c

Blocks.
Tackle, Rope and Iron Strapped, Providence Tool Co.'s list......dis 30 %
Burr's......dis 10 %
Stanley Rule and Level Co......dis 25&10 %

Bolts.
Cast Iron Barrel, Shutter, &c......dis 60&10 %
Cast Iron Chain......dis 60&10&10 %
Wrought Iron Barrel......dis 50, 10&10 %
" " Square......dis 50, 10&10 %
" " Shutter......dis 60&10 %
Wrought Iron Flush, Stanley's......dis 15&10 %
" " " Sargent's......dis 50&10&10 %
Carriage and Tire, Common......dis 75 %
" " " Norway Iron......dis 50&10 %
" " " R. B. & W......(old list) dis 60 %
" " " Philadelphia......dis 60&5 %
" " " Shelton's......(old list) dis 60&10 %
Union Nut Company, old list......dis 65&5 %
Stove......dis 25 %
" R. B. & W......dis 25 %
" Shelton's Shaved Head......dis 25 %
Borax......15c. ℘ ℔

Boring Machines. Upright. Angular.
Rovey's, no Augers......$3·15 $4·00 net
" with Augers......5·00 6·00 net
Douglass', no Augers......3·25 4·00 net
" with Augers......5·00 6·00 net
Parr's, no Augers......3·00 7·50 dis 30 %
" with Augers......7·50 10·00 dis 30 %
Kellogg's, no Augers......5·25 6·75 dis 15 %
Sweets', "......4·75 6·25 dis 15 %
Snell's, "......4·75 6·25 dis 20 %
Phillips', with Augers......10·00 dis 25 %
Mortising Machines, $20·00 each......dis 20 %

Bow Pins.
Union Nut Co......new list dis 50&10&5 %
Hotchkiss'......dis 50 @ 55 %
Humason, Beckley & Co.'s......dis 50&10&5 %
Sargent & Co.'s......dis 50&10&10 %

Braces.
Barber's Patent......dis 40&5 %
Q. S. Backus......dis 40&10 %
Wilson Mfg. Co......dis 10 %
Spofford's Patent......dis 50 %
Noble's Patent......dis 40&5 %
Ives' Novelty......dis 40&7½&10 %
" Hamden......dis 45&10 %
Common Ball (American)......dis 25 %
Brackets.—Shelf......dis 60&10 @ 65&10 %
Bright Wire Goods......dis 65&10&10 %
Bull Rings.—Union Nut Co......dis 50&20 %
Sargent's......dis 60&10 %
Hotchkiss'......2½ in., $2·25 net
Bung Hole Borers.
Common and Ring......dis 20&10 %
Ives' Tap Borers......dis 10&10 @ 25 %
Enterprise Mfg. Co......dis 20 %

Butchers' Cleavers.
Humason & Beckley Mfg. Co......dis 20&10 %
Bradley's......dis 25 %
Beatty's......dis 20 %
2 3 4 5 6 7 8
$19·50 $21·50 $24·00 $27·00 $30·00 $31·50 $36·50 $40·00
Hart Mfg. Co......dis 45&10 %
0 1 2 3 4 5 6
$25·25 $29·75 $34·25 $38·75 $43·25 $46·50 $54·00

Butts.
Wrought Brass......dis 30 %
Cast Brass......dis 30 %
Common Cast, not Drilled.
Fast Joint, Narrow......New list July dis 30&10 %
" Broad......" dis 40&10 %
" Jap'd......" dis 35&10 %
Loose Joint, Narrow and Broad......" dis 50&10 %
" Jap'd......" dis 45&10 %
Parliament Butts & Mayer's Hinges......" dis 40&10 %
Loose Pin......" dis 45&10 %
" Japanned......" dis 55&10 %
Loose Pin, Jap'd, Plated Tips......" dis 50&10 %
Drilled and Wired.
Fast Joint, Narrow......New list July 1, dis 25&10 %
" Broad......" dis 35&10 %
" " Japanned......" dis 30&10 %
Loose Joint......" dis 45&10 %
" Japanned......" dis 45&10 %

Parliament & Mayer's Hinges new list July 1 dis 35&10 %
Loose Pin......" dis 40&10 %
" Japanned......" dis 50&10 %
" " Plated Tips......" dis 45&10 %
Union Mfg. Co.'s Fancy Butts.—
Figured Enameled Loose Joint......dis 55&10 %
Nickel Plated "......dis 33⅓&10 %
Boston Finish, Plain......dis 30&5 %
" " with Iron Acorns......dis 75&5 %
" " with Sil'd "......dis 65&5 %
Wrought Iron.
Fast Joint, Narrow, Lt. and Regular......dis 30 %
" Broad......dis 35 %
Loose Joint, Narrow and Broad......dis 35 %
Table Butts, Back Flaps, &c......dis 30 %
Inside Blind, Regular......dis 30 %
" " Light......dis 40 %
Loose Pin, Wrt......dis 35 %
Am. Spiral Spring Butt Co.. list May 1st......dis 25 %
Union Spring Hinge Co......dis 30 %
Blind Butts, Parker......dis 65&10 %
" Palmer......dis 40 %
" Seymour......dis 55&10 %
" Shepard......dis 60 @ 60&10 %
" Lull & Porter......dis 60 %
" Nicholson......dis 45&10 %
" Huffer......dis 33⅓&10 %
" Garretson, No. 1......dis 65 %
" Clark's, Nos. 1, 3 and 5......dis 65&10 %
" Clark's No. 2......dis 65&10 %
" " Nos. 2 4, 4½, 6, 8, 10......dis 45 %

Can Opener.
Messenger's Comet......per doz $3·00 dis 20 %
American......per doz 2·25 dis 40 %
Lyman's......per doz 3·75 dis 20 %
No. 4, French......per doz 2·25 dis 40 %
No. 5, Iron Handle......per doz 2·25 dis 40 %
Sprague's......Nos. 1 2 3 4
Per doz $4·00 4·50 5·00 9·00 dis 55&10 %
Star......per doz $5·00 dis 20&10 %
Eureka......per doz $3·50 net
Sardine Scissors......per doz $7·00 dis 40 %
Caps—Percussion, per 1000.
G. D......37 @ 40c
Ely's E. B......1-4s, 58c.; 1-10s, 70c. gold
" Double Waterproof, 1-4s, $1·45; 1-10s, $1·52½c., gold
Colt's......1-10s 80c gold
Carpet Sweepers.
Union......each $2 75 net
Welcome......each 2 75 net
Cartridges.—Metallic......dis 55&5 %
Cards.—Horse and Curry......dis 30&10 %
Cotton......dis 10&10 %
Wool......dis 15&10 %
Carpet Stretchers.
Cast Steel, Polished......per doz $5·00 dis 30 %
Cast Iron, Steel Points......per doz $2·00 dis 45&5 %
Casters.
Bed......dis 30&10 @ 40 %
Plate and Shallow Socket......dis 40&10 %
Deep Socket......dis 35 @ 40 %
Cattle Leaders......new list dis 60&10 %

Chain
English Coil......net gold
℘ ℔......11½ 8¾ 7¾ 7⅜ 7¼ 7c
3-16 ¼ 5-16 ⅜ 7-16 ½
Trace, 6½-10-2......by the cask, ℘ pair, gold 55c
Trace, 7-10-2......by the cask, ℘ pair gold. 62c
German Halter Chain......dis 25 % gold
German Coil......dis 25 % gold
Galvanized Pump Chain......℘ ℔ 13c
Jack Chain, Iron......dis 50&10 %
" Brass......dis 40&10 %

Chalk.
White......℘ gross, 57c net
Red......℘ gross, 90c net
Blue......℘ gross, $1·00 net
White Crayons......℘ gross. 16½c net

Chisels.
Socket Framing, Douglass, Extra......dis 60&10&10 %
" " Crossman......dis 50&15&10 %
" " Buck Bros. equivalent to dis 50&17½ %
" " Hart Mfg. Co......dis 60&10 %
" " Merrill......dis 60&10 %
" Firmers, Douglass, Extra......dis 60&10 %
" " Crossman......dis 50&10&10 %
" " Buck Bros......equivalent to dis 50&15 %
" " Hart Mfg. Co......dis 60&5 %
" " Merrill......dis 60 %
Socket Corner......dis 60&10 %
Tanged Firmers......dis 40&10 %
" " Butcher's......$5·50 to £ gold
" " Newbould's......$5·50 to £ gold
" " Spear & Jackson's......$5·00 to £ gold
" " Buck Bros (Shank)......$5·50 to £ gold

Clamps.
Iron, Providence Tool Co.'s......dis 20 %
" Adjustable, Gray's......dis 20 %
" " Lambert's......dis 20 %
" " Snow's......dis 40&5 %
" " Hammer's......dis 10 %
" Cabinet......dis 60&10 %
Saw Clamps......see vises
Clips, Axle.
Norway or Best......dis 30 @ 40 %
Superior......dis 50 @ 55 %

Coal Shovels.
Wrought Iron. Nos. 1 2
Long Wrt. H'dles..per gross, $15·00 18·00 dis 25 %
Short " " 12·00 14·00 dis 25 %
Wood Handles...... " 12·00 14·00 dis 25 %
Gem (Edgar's Pat.) " 15·00 18·00 dis 25 @ 30 %
Cast Iron, Iron Handle......per doz, 75 @ 80c. net
" Wood Handle......per doz, $1·00 net

Coal Hods.
Inch. 14 15 16 17 18
Regular, Jap'd...per doz, $12·00 12·75 13·50 15·50 18·00 dis 60&10 %
Regular, Gal'd... " 15·00 16·00 17·50 19·50 22·50 dis 50&10 %
Ladies' Favorite, Jap'd. ℘ doz 15·00 16·00 18·00 20·00 dis 50 %
Ladies' Favorite, Galvanized...... " 19·00 20·00 22·00 25·00 dis 45 %
Funnel Hods.— Nos. 15 16 17
Oriental, Japanned ℘ doz. $16·50 18·00 20·00 dis 50 %
" Galvanized.. " 21·50 22·50 24·00 dis 40 %
Morning Glory, Jap'd. " 16·50 18·00 20·00 dis 50 %
" " Gal'd. " 21·00 22·50 24·00 dis 40 %
Iron Clad, Jap'd...... " 21·50 dis 60&10 %
" " Gal'd...... " 22·50 dis 50&10 %
Sidney Shepard & Co.'s new list......dis 10 %
Cockeyes....1⅛ in., 28c.; 1¼ in., 33c.; 1⅜ in., 37c. net

Cocks.
Brass Racking......dis 30&10 %
Lock and Globe......dis 30&10 %
Lever Bibbs......dis 30&10 %
Ale and Beer......dis 25&10 %
Coffee Mills.
Board and Box......dis 15 @ 20 %
Brighton......dis 20 %
Increase Wilson's......dis 20 %
Selsor's Pat......$9·50, $10·50—dis 25 %
American (Enterprise Mfg. Co.)......dis 20 %
French Steel......dis 20 %
The Swift......dis 20 %
Compasses and Dividers.
Bemis & Call Co.'s......dis 35&10 %
Cook's......dis 15 %
Excelsior......dis 40 %
Peck Stow & Wilcox......dis 25 %
Miller's Patent......dis 25&10 %
Coopers' Tools.
Bradley's......dis 15 @ 20 %
Chas. E. Little......dis 20 @ 25 %
Swan & Brombacher......dis 15 @ 20 %
Corkscrews......dis 25 %
Corn Knives and Cutters.
Bradley's......dis 10 %
Crow Bars.
Cast Steel......℘ ℔ 11c. net
Iron, steel points......℘ ℔ 5c
Crucibles.—Gautier & Co......℘ No. 5½c
Curling Irons, &c.
⅜, ½, ⅝ in., $1·80, $2·00, $2·40......dis 10 %
Curling Tongs......℘ doz $6 50—dis 15 %
Pinching Irons......℘ doz 7 50—dis 20 %
Curry Combs.
Hotchkiss' & Kellogg's, Iron & Brass, old list......dis 40 %
Fitch's (List of No. 240, $1)......dis 20&10 %
Rubber......℘ doz, $9·00—dis 15 %
Wood Tooth (Fuller Bros.)......per doz $2·25 net
Curtain Pins.—Silvered Glass......new list dis 15 %

Cutlery.
American Table } Meriden } New list Jan. '75, dis 25 %
American Pocket } Cutlery Co }......dis 25 %
Am. Pocket—Humason & Beckley Mfg. Co...dis 20&10 %
Am. Miller Bro.'s Cutlery Co......dis 25 %
Naugatuck Cutlery Co......dis 25 %
Dippers.
Britannia......per doz 7·50—dis 30 %; by bbl. dis 33⅓ %
Cocoa, Plain......per doz $2·25—dis 20 %
" Rimmed......per doz 3·75—dis 20 %
Dog Collars.
Embossed Gilt......dis 20 %
Leather......dis 30 %
Brass......dis 25 %

Door Springs.
Gem (V.W.&W.), No. 1 Large, Jap'd..℘ doz $3·50 }
" " No. 2 Medium......℘ doz 2·50 } dis 10 %
" " No. 3 Small......℘ doz 2·00 }
Gray's (V.W.&W.)......℘ doz 2·50 net
Torrey's Pattern (V.W.&W.)......℘ doz $2·50 net
Torrey's Patent......℘ doz $2·50 net
Johnson's......per doz $3 00 net
Philadelphia......5 in., $5·00; 8 in., $7·00 dis 15 %
Palmer's Japanned No. 6......℘ doz $5·00 }
" Coppered "......" 6·00 } dis 20 %
" Silvered "......" 8·00 }
Challenge— Nos. 5 7 8
Japanned......per doz $2·00 2·50 3·50 }
Coppered......per doz 4·00 4·50 5·00 } dis 10 %
Galvanized......per doz 3·50 4·00 4·50 }
Nickeled......per doz 5·50 6·00 7·00 }
Barker's Concealed......dis 12½ %

Drawing Knives.
Crossman's No. 1......dis 50&15&10 %
Douglass, Extra......dis 60&10&10 %
Hart Mfg. Co., No. 1......dis 60 %
Merrill......dis 60&10 %
Nobles Mfg. Co......dis 15 %
Bradley's......dis 25 %
Adjustable Handle......dis 15 %
Drills and Drill Stocks.
Blacksmiths'......each $2 60 net
" Self-Feeding......each $8 00 net
Breast, P. S. & W......dis 25 %
" Aiken's......dis 25&10 %
" Hotchkiss......dis 10 %
" Wilson's......dis 10 %
" Miller's Falls......dis 25 %
Ratchet, Merrill's......dis 20 %
" Ingersoll's (old list)......dis 25 %
" Whitney's......dis 20 %

Ratchet, Weston's......dis 20 %
" Moore's Triple Action......dis 20 @ 25 %
Wilson's Drill Stocks......dis 10 %
Automatic Boring Tools......each $2·75—dis 20 %
Drill Chucks.—The Danbury..each 10·00, dis 20 @ 25 %
Beach Patent (Morse)......dis 15 %
Egg Beaters.
Monroe's......8 in. 10 in.
Per doz $8·00 9·00......dis 10 %
Dover......℘ doz $6·00—dis 10 %
National......℘ doz $4·50—dis 20 %
Peerless......℘ doz $3·00—net
Emery.
Genuine Chester—Regular Nos......℘ ℔ 6c }
" Flour and FF......℘ ℔ 4c } dis 10 %
Washington Mills—Regular Nos......℘ ℔ 6c
" Flour......℘ ℔ 5c
Enameled and Tinned Ware.
Kettles......dis 30 @ 40 %
Sauce Pans......dis 25 %
Glue Kettles......dis 25 %
Tinned Saucepans......dis 25 %
Escutcheons.
Door Lock......Same discounts as Door Locks
Brass Thread......dis 60&10 %
Wood......dis 25 %
Faucets.
Fenn's......dis 50 %
" Cork Stops......dis 40 %
Star......dis 55&10 %
Frary's Patent Petroleum......dis 15&10 %
Taylor's Pattern "......dis 20&10 %
Wood and Metallic......dis 40 %
Wood, Cork Lined......dis 65 @ 65&5 %
Enterprise Mfg. Co., Self-Measuring......dis 20 %
Felloe Plates......℘ ℔ 15c; dis 25&10 %

Files.
American File Co......$5 00 to £ currency—dis 20 %
Arcade File Works......$5·00 to £ currency
Auburn File Works......$5 00 to £ currency
Nicholson......new list, Jan. 1. 1875, net @ 5 %
Hartford File Co......$5 50 to £ currency—dis 10 %
L. B. Heller & Co......$5 00 to £ currency
Heller & Bros......$5 00 to £ currency
"Western"......5 00 to £ net
Wheeler, Clemson & Co......$5 00 to £ currency
Rothery's......$5 to £ currency
J. & Riley Carr......5 25 to £ gold
" Horse Rasps......5 50 to £ gold
Stubs'......8 50 @ 9 00 to £ gold
Butcher's......5 25 to £ gold
Walter Spencer & Co.'s "Diamond"......5 00 to £ gold
Spear & Jackson's......5 00 to £ gold
Jowitt's......4 50 to £ gold
Newbould's......5 25 to £ gold
W. K. & C. Peace's "Imperial"......5 25 to £ gold
R. Ibbotson......5 00 to £ gold
Turton Bros. & Matthews......$5 50 to £ currency
Fisher's......4 75 to £ gold
Goodlad's......4 00 to £ gold
Moss & Gamble......5 25 @ 5 50 to £ gold
Thos. Turner & Co. (Peter A. Frasse & Co.) 5 00 to £ gold
" " Horse Rasps......5 25 to £ gold
"Philo Sheffield," P. T. Co......5 00 to £ gold
Limet & Co. (French)......5 00 to £ gold

Fluting Machines.
Mrs. Coles' Pony..4 in., $4·75; 5 in., $5; 6 in.. 5·50; 7 in., $6
Knox with 4-inch Rolls......3 80 each net
" " 6 "......4 80 each net
" " 8 "......6 75 each net
O. K......6 50 each net
Peerless, 4-inch Rolls......4 00 each net
" 5 " "......4 75 each net
Excelsior, No. 1......4 75 each net
" No. 2......6 50 each net
Diamond......7 50 each net
Champion, 6 inch rolls......6 00 each net
" 4 inch rolls......5 00 each net
Climax 7-inch Rolls......8 00 each net
" 4½ "......6 50 each net
Empire......4 00 each net
Eureka, No. 1, 7-inch Roll......8 00 each net
" No. 2, 5-inch Roll......6 00 each net
Defiance......4 in., $3·50; 6 in., $4·00; 8 in., $6·50 each net
K. F. M., 4½-inch Roll......5 50 each dis 15 %
" 6-inch Roll......6 00 each dis 15 %
Myers' Fashion Fluter, 4½-inch Rolls......2 75 each net
" Convex Brass Fluter, Sad Iron attachment......per doz $15·00
Domestic Fluter......$1·50 each net
Geneva Hand Fluter......$15 00 per doz net
Fluting Scissors......dis 25&10 %
Forges.
"Empire" (W. P. Kellogg & Co.)......dis 20 %
Forks.
Hay, Manure & Spading......dis 33⅓ %
Plated A 1......dis 50 %
Fry Pans.
Burnished, P. S. & W., new list......dis 50 %
℘ doz.....$3·00 3·75 4·25 4·75 5·25 6·00 7·00 8·00 9·00
No. 0 1 2 3 4 5 6 7 8
Smith, Burns & Co., "Excelsior" Polished......dis 35 %
℘ doz......$3·70 4·00 4·70 5·30 6·00 7·00 8·00 9·00
No...... 1 2 3 5 6 7 8
Gas Stoves.
Tift & Howard......dis 20 %
Gauges.
Marking......dis 45&10 %
Wire......dis 10 %
" Smith's Patent......per doz $18·00, dis 40 %
Gimlets.
Nail and Spike......dis 25&10 %
Double Cut, Shepardson's......dis 20 %
" " Hartwell's......dis 40 %
" " Ives'......dis 25 %
" " Douglass'......dis 20&10 %
Glue Pots.
Tinned and Enameled......dis 25 %
Family, Howe's "Eureka"......dis 25 %
" L. E. & C.'s "Handy"......dis 25 %
Grind Stone Fixtures
Sargent's Patent......dis 65&10 %
Reading Hardware Co......dis 10 %
J. F. Green & Bro......dis 20 %
Hart Mfg. Co.'s......dis 60&5&10 %
Rick Bros......dis 45&5 %

Hammers.
Emmet Hammer Co.'s Handled......dis 25 %
" " Sledge & Stone.℘ ℔ 40c.; dis 40 %
Humason & Beckley Mfg. Co......dis 16⅔&10 %
Maydole's......dis 12 %
Henry Hammonds' (Maydole's List)......dis 12 %
Cheney's......net @ dis 5 %
Verree......dis 5 %
Yerks & Plumb......dis 20 %
Magnetic Tack......dis 25&10 %
Warner & Noble's......dis 10 %
Hand Cuffs and Leg Irons.
Tower's Hand Cuffs, $4 00 per pair......}
" Leg Irons $6 50 per pair......} dis 25 %
Providence Tool Co.'s Hand Cuffs $15 per doz }
" " Leg Irons 25 " } dis 10 %

Handles.
Door or Thumb Latches—
Nos. 0 1 2 3 4
Per doz $0·80 1·00 1·18 1·35 1·50—dis 60 %
Roggin's Latches......40c. @ 50c. net
Bronzed Iron Drop Latches......per doz $1·30 net
Wrought Chest......dis 60&10 %
Surface Chest......dis 65&10&10 %
Flush Chest......dis 60&10&10 %
Lifting......dis 60&10 %
Coffin......dis 50&10 @ 60&10 %
Saw and Plane......dis 25&10 %
Hammer and Hatchet......dis 10 %
N. Carolina Handle Co......dis 15 %
Brad Awl......per gross $3 50—dis 20&10 %
Hickory Firmer Chisel, ass'td " 5 25—dis 20&10 %
" " " large " 6 50—dis 20&10 %
Apple " " ass'td " 6 00—dis 20&10 %
" " " large " 7 50—dis 20&10 %
Socket " " ass'td " 8 50—dis 20&10 %
" Framing " " " 7 00—dis 20&10 %
File...... " " 4 00—dis 20&10 %
Auger...... " " 6 50—dis 20&10 %
" large " 8 00—dis 20&10 %
Patent Auger, Ives'......dis 25&10 %
" " Douglass'......per set $1 25—dis 10 %
" " Swan's......per set $1 00—dis 30&10 %
Hangers.
Barn Door......dis 65&10 %
"Anti-Friction" No. 1, $1·25; No. 2, $1·50 ℘ pr. dis 30&5 %
Novelty......dis 30 %
Challenge......dis 40 %
Harness Snaps.
Henshaw's......dis 25&10 %
Judd's......dis 40 %
Fitch's (Bristol)......dis 30 %
Hotchkiss'......dis 10 %
Andrews'......dis 25 %
Sargent's......dis 50&10 %
New York Wire......dis 20&20 %

Hatchets.—Isaiah Blood......dis 15 %
Shingling, Nos. 1 2 3......℘ doz $7 25 8 00 8 75
Claw, " 1 2 3......℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3......℘ doz 7 50 8 00 8 50
Hunt's......dis 15 %
Shingling, Nos. 1 2 3......℘ doz $7 25 8 00 8 75
Claw, " 1 2 3......℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3......℘ doz 7 50 8 25 9 00
Hurd's......dis 25 %
Shingling, Nos. 1 2 3......℘ doz $8 00 8 50 9 00
Claw, " 1 2 3......℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3......℘ doz 8 00 8 50 9 00
Newark's Edge Tool Co.'s......dis 25 %
Shingling, Nos. 1 2 3......℘ doz $6 50 7 00 7 50
Claw, " 1 2 3......℘ doz 7 25 7 75 8 25
Lathing, " 1 2 3......℘ doz 6 50 7 00 7 50
Yerkes & Plumb......dis 20 %
Shingling, Nos. 1 2 3......℘ doz $7 00 7 50 8 00
Claw, " 1 2 3......℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3......℘ doz 7 00 7 50 8 00
Simmon's......dis 15 %
Shingling, Nos. 0 1 2 3....℘ doz $7 50 8 00 8 50 9 00
Claw, " 1 2 3....℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3....℘ doz 8 00 8 50 9 00
Broad, " 1 2 3....℘ doz 9 00 10 00 12 00
" " 4 5 6....℘ doz 14 00 16 00 18 00
" " 7 8....℘ doz 20 00 22 00
Elephant......dis 30 %
Shingling, Nos. 1 2 3......℘ doz $8 00 8 50 9 00
Claw, " 1 2 3......℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3......℘ doz 8 00 8 50 9 00
J. P. Verree & Co......dis 5 %
Shingling, Nos. 1 2 3......℘ doz $7 00 7 50 8 00
Claw, " 1 2 3......℘ doz 7 50 8 00 8 50
Lathing, " 1 2 3......℘ doz 7 00 7 50 8 00
Underhill's......dis 10 %
Shingling, Nos. 1 2 3......℘ doz 7 25 8 00 8 75
Claw, " 1 2 3......℘ doz 7 75 8 50 9 25
Lathing, " 1 2 3......℘ doz 12 00 11 00 13 00
M. H. Jones & Co......dis 25 %
Shingling, Nos. 1 2 3......℘ doz $8 00 8 50 9 00
Claw, " 1 2 3......℘ doz 9 00 9 50 10 00
Lathing, " 1 2 3......℘ doz 8 00 8 50 9 00

Hay Knives.—"Lightning"......per doz $20·00 net
Hinges.
Gate, Western......℘ doz $6·25—dis 60&10 %
" N. E......℘ doz 11·25—dis 60&10&10 %
" N. Y. State......℘ doz 7·20—dis 60&10 %
Rolled Plate......dis 65&10 %
" Raised......dis 65&10 %
Wrought Strap and T......dis 33⅓&10&5 %
Providence Plate. { 6 and 8 in. 11c ℘ ℔; over 8 in. 9½c ℘ ℔ }......dis 30 %
Screw Hook and Strap......{ 8, 10, 12 in.. 6½c; 14 to 36 in. 5½c }....net
Heavy Welded Hook......{ 8 to 12 in.. 6½c; 14 in & up, 6c }....net
Screw Hook and Eye......{ ⅜ to 1 in., 8½c; ⅝ in. 9½c; ½ in. 11½c }....net
Hoes.
Solid Shank, C. S......℘ doz $8 00—dis 35 %
Socket......℘ doz 9 00—dis 35 %
Riveted Eye......℘ doz 5 00—dis 35 %
Grub......dis 25 %
Planters......net @ dis 5 %
Scovill......add 33⅓ %
Scovill Pattern......net @ dis 5 %
Lane's C. S. Cresent, American Pattern......list net
" " " Scovill Pattern......add 10 %
Hooks.
Bird Cage......dis 60&10 @ 70&10 %
Cotton......dis 50 %
Belt......dis 55 @ 60 %
Bench—Hotchkiss' $5 00 ℘ doz......dis 10 %
" Weston's No. 1, $8·00; No. 2, $7·00 per doz net
" McGill's......$3 00 per doz, dis 10 %
" Skinner's......per doz $6·25, dis 20 %
Clothes Line, Harness, Wardrobe, Hat and Coat, Ceiling. } Hart's list......dis 60&10&10 %; Sargent's list......dis 60&5&10 %; Reading list......dis 35&10 %
Wrought Staples and Hooks and Staples......dis 70&10 %
Wire Screw Hooks and Eyes......dis 65&10&10 %
Grass......dis 20 %
Whiffletree—Patent......dis 33⅓ %
Hooks and Eyes—Malleable Iron......dis 60&10&10 %
" " Brass......dis 60&10&10 %

Horse Nails.

Nos.		5	6	7	8	9	10
American Pressed	℘ ℔	22c	20c	20c	20c	20c	20c
Ausable	"	30c	27c	25c	24c	23c	22c
" P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
" " & Blued	"	32c	29c	27c	26c	25c	24c
Cortland	"	29c	26c	24c	23c	22c	21c
Buffalo Forged	"	31c	28c	26c	25c	24c	23c
Globe, P't'd & Pol'd	"	31c	28c	26c	25c	24c	23c
National, Pointed and Polished, Pat. Fin	"	28c	25c	23c	22c	21c	20c
National, Pointed and Polished, Ex. Fin	"	30c	27c	25c	24c	23c	22c
Perkins' Pointed and Polished	"	30c	27c	25c	24c	23c	21c
Perkins' Pointed and Blued	"	31c	28c	26c	25c	24c	22c
Putnam	"	32c	28c	26c	25c	24c	23c
Vulcan, P't'd & Blued	"	33c	30c	28c	27c	26c	25c

Star Brand, 16c.; Morgan......14c
Putnam......2000 lbs., dis 5 %
Ausable, Am. Pressed, Perkins, Globe, National and New London......1000 lbs., dis 5 %
Vulcan......1000 lbs., dis 7½ %
Vulcan and Brundage......500 lbs., dis 5 %
Horse Shoes.
Burden......℘ keg, $5·12½
R. I. Horse Shoe Co., Perkins Pattern......℘ keg, 5·12½
" " R. I. Pattern......℘ keg, 5·87½
Mule Shoes......℘ keg, 6·12½
Perkins' Snow......℘ keg, 6·62½
Boston Rolling Mills Hand Made......℘ ℔ 8c
Kettles.
Brass......℘ ℔ 45c net
Enameled......dis 30 @ 40 %
Knives.
Ames' Butcher Knives......dis 20 %
" Shoe......dis 15 %
" Bread......℘ doz $1·50—dis 15 %
Hay and Straw, "Wadsworth's"......dis 20 %
Table and Pocket......See Cutlery
Knobs.
Carriage (Jap'd 80 cents per gross)......dis 60&10 %
Base—Common......net
" Plush Tip......dis 10 %
" Elastic End, No. 8......dis 45 @ 50 %
Door, Mineral......℘ doz $2·25 }
" Por. Jap'd......℘ doz 8·00 } ...dis 40&5 %
" Plated......℘ doz 7·00 } & 2 % for cash
" Por......℘ doz 7·50 }
Furniture, Plain......75c gross inch, dis 10 %
Ladles.
Melting, Hart's......dis 55&10 %
" Sargent's......dis 50&10 %
" Reading......dis 15&10 %
" Monroe's Patent......per doz $4·00 dis 20 %
Lanterns.
Tubular......No. 0, $11·00; No. 1, $14·00 net
Peerless......No. 6, per doz $11·75—dis 10&10 %
Brady's Patent......dis 10 & 10 %
Etna......dis 10 & 10 %
Yankee......dis 10 & 10 %
De Beque......dis 10 & 10 %
Police, Small......per doz $7·50 net
Lard Presses.
Draw Cut, 14 inch......each $65 00—dis 20 %
Lemon Squeezers.
Porcelain Lined......per doz $7 00, dis 15 %
Eureka, Tinned......per doz, $10·00 dis 10 %
Dunlap's Improved......per doz $6·00 net
Lines.
Linen Fish......dis 20 %
Cotton Chalk......dis 40 @ 45 %
Sil. Lake Chalk......Nos. 0, 1, 2, 3, $6, 6·50, 7, 7·50, dis 20 %
Mason's......dis 20 %

Locks and Latches.
Cabinet—Gaylord......dis 25 %
" Eagle......dis 25 %
Trunk......dis 25 %
Langstroth & Crane, Round Key......dis 40 %
" " Flat Key......dis 33⅓ %
Barnes & Deitz, Flat Key......dis 25 %
Yale Lock Co., Flat Key......dis 40 %
Sargent & Greenleaf, Flat Key......dis 20 %
Continental......dis 25 %
Shepardson's......dis 20 %
American Lock Co......dis 33⅓ %
Plate......new list dis 40&2 %
Trenton, Branford, Norwich, Russell & Erwin, Norwalk, Nashua, Mallory, Wheeler & Co., P. & F. Corbin, Parker & Whipple, Jacobus & Nimick Mfg. Co. }......dis 40&5 % ...and 2 % for cash
Padlocks, Russell & Erwin, " Mallory, Wheeler & Co., " Wm. Wilcox & Co. }......dis 40&5 % ...and 2 % for cash
" Romer's......dis 15 %
" Vulcan Hardware Co......dis 20 %
" New York Lock Co......dis 20 %
" J. H. McWilliams......dis 5 %
" Barnes & Deitz......dis 25 %
" D. K. Miller Lock Co......dis 30&10 %
" Penn Lock Works......dis 20 %
Mallets.—Hickory and Lignumvitæ......dis 20 %
Meat Cutters.
Dixon's (P. S. & W.). Nos. 1 2 3 4
℘ doz. $14 00 $17 00 $19 00 $30 00 dis 25 %
Miles Challenge......Nos 1 2 3
℘ doz. $22·00 $30·00 $40 00—dis 30 %
Perry's (P. S. & W.)....Nos. 200 300 400
℘ doz. $22·00 $27·00 $40·00—dis 25 %
Woodruff's (P. S. & W.)......Nos. 100 150
℘ doz. $15·00 $18·00—dis 25 %
Hales'......Nos. 11 12 13
℘ doz. $27·00 $33·00 $42·00—dis 35&2 %
Draw Cut......Nos. 5 6 7
Each $56·00 $90·00 $230 00—dis 20 %
American......dis 25 @ 25&5 %
No...... 1 2 2½ 3 4 B 5
Each....$6·00 $9·00 $12·00 $15·00 $30·00 $60·00 $75·00
Molasses Gates.
Stebbins'......dis 62½&10 %
" Tinned ends......dis 40&10 %
Bush's......dis 20 %
Lincoln's......dis 50&10 %
Weed's......dis 15 %
Mortars and Pestles.
Iron......net
Nail Pullers.
Taft's......per doz $24·00 net
Nails......10d., $3·00 @ $3·10 net
Nuts and Washers.
Nuts......large, 7c; small, 10c off list.
Washers......large, 9c; small, 12c off list.
Oilers.
Miller's Zinc, Brass and Copper......dis 40 %
Sheet Metal Screw, Zinc, Brass and Copper......dis 40 %
Olmsted's......dis 25&10 %
Broughton's......dis 25&10 %
Malleable......per doz $5 00 dis 10 %
Prior's Patent or "Paragon"......dis 40 %
Ox Shoes.
Concave......℘ ℔ 18c net
Ox Balls......dis 60&10 %
Pencils
Faber's Carpenters'......net
" Round Gilt......℘ gross $6 00 net
Dixon's Lead......℘ gross $4·50 net
" Lumber......℘ gross 9·00 net
Picture Nails and Knobs.
Brass Head......dis 60&10 %
Porcelain Head......dis 55&10 %
Richards' Patent......dis 40 @ 40&10 %
Judd's......dis 60&10 %
Pinking Irons......per doz $2 75—dis 45 %
Planes and Plane Irons.
First Quality......dis 45 %
Second Quality......dis 50 %
Bailey's Patent Adjustable......dis 25&10 %
Plane Irons, Butcher's......$5 50 to £ gold—new list
" Buck Bros......$5 50 to £ gold
" Bailey's Patent......dis 25&10 %
" Auburn Tool Co.'s......dis 25 %
" Greenfield Tool Co......net list
" Middletown Tool Co......net list
" Ohio Tool Co......dis 10 %
" Spear & Jackson's......5 00 to £ gold
" Sandusky Tool Co......dis 10 %
Plow Bits, Greenfield Tool Co......dis 10 %
Pliers and Nippers.
Button's Patent......dis 33⅓ %
Hall's Patent Nippers..No. 1, $15; No. 2, $21 ℘ doz dis 25 %

Leach's Patent Wire Cutters......per doz $6 50—dis 15 %
Gas Pliers......dis 25 %
Plumbs and Levels.
Stanley R. & L. Co.'s Pat. Adjustable......dis 65&10 %
" " " Non-Adjustable......dis 65&10 %
Chapin's......dis 66⅔&10 %
Standard Rule Co.'s New Adjustable......dis 60&10
Standard Rule Co.'s Non-Adjustable......dis 60&10&10 %
Pocket Levels......dis 50&10 %
Johnson's Patent Adjustable......dis 60&10 %
Davis' Patent......dis 65&10 %
Pulleys.
Hot House and Tackle......dis 60&10 %
Jap'd Screw......dis 60&10 %
Brass Screw......dis 60&10 %
Jap'd Side......dis 60&10 %
" Clothes Line......dis 60&10 %
Hay Fork......per doz $4 50 @ 5 00, dis 10 %
Pumps.
Douglas Cistern, etc......new list dis 25 %
" S. & F......new list dis 20 %
Union Mfg. Co's. Cistern and Pitcher......dis 25 %
" " " Rams......dis 20 %
" " " Garden Engines......dis 10 %
Cucumber (Burlingham & Purdy)—
6 ft. No 3, with 12 ft. pipe......$4·00 net
ft. No. 1, with 12 ft. pipe......4·50 net
From 6 to 36 ft. add 20 cents per ft.
Pipe. 8c. per ft.; Coupling, 20c. per ft.
Punches.
Belt or Drive......per doz $1·50 net
Spring......per doz $6·50—dis 20&10 %
Rail.
Sliding Door, Wrought Brass......℘ ℔ 44c., dis 10 %
" " Iron, Painted......℘ foot 9c—dis 55&10 %
Barn Door, ⅜, ⅝ and ¾ inch......dis 60&10&10 %
" " for N. E. Hangers......dis 60&10&10 %
Rakes.
Cast Steel......dis 35 %
$8 00 9 00 10 00 11 00
8 10 12 14 teeth.
Malleable......dis 35 %
$5 00 5 50 6 00 6 50
9 11 13 15 teeth.
Razor Straps.
Evan's......dis 40 %
Genuine Emerson (B. F. Badger or C. Emerson)......dis 25 %
Imitation Emerson......℘ doz $2·75—dis 40 %
Hunt's......dis 40 %
Chapman......dis 40 %
Torrey's......dis 10 @ 15 %
Saunder's......dis 10&10 %
......net @ 10 %
Rivets.—Old Colony.
Iron and Tinned......dis 55 %
In bulk......dis 40 %
Copper Rivets and Burrs......dis 20 %
Nos. 7 8 9 10 11 12 13 14 15
Per lb. 49c 50c 52c 54c 56c 59c 60c 65c 70c
Rivet Sets......dis 5 @ 10 %
Rods.
Stair......dis 40 %
" American Patent......dis 33⅓ %
Rollers.
Barn Door......revised list dis 60, 10&10 %
Novelty......dis 10 %
Rope. Manufacturers' List of Sept. 28, 1875.
Manilla......½ inch and larger ℘ ℔ 14½c
"......⅜ inch ℘ ℔ 15 c
"......¼ and 5-16 inch ℘ ℔ 15½c
Manila Lath Yarn and Tar'd Rope......℘ ℔ 14 c
" Hay Rope......℘ ℔ 15 c
Sisal......½ inch and larger ℘ ℔ 11½c
"......⅜ inch ℘ ℔ 12 c
Sisal......¼ and 5-16 inch ℘ ℔ 12½c
" Hay Rope......℘ ℔ 12 c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 60&10 %	dis 50&10 %
Stanley	dis 60&10 %	dis 50&10 %
Standard	dis 60&10 %	dis 50&10 %
Stephens'	dis 60&10 %	dis 50&10 %
Willis Thrall & Son	dis 60&10 %	dis 50&10 %

Sad Irons.
From 4 to 10 lbs......℘ ℔ 3¼ @ 3½c net
Sad Iron, Nickel Stand attached......℘ ℔ 9c
Self-Heating......per doz $10 00 net
" Tailors'......per doz 22 50 net
Sand Paper.
Beader & Adamson's Flint, 00 to 1½...$4 25 ℘ ream }
" " " 2, 2½ & 3. 4 75 " }
" " Assorted. 4 25 " } dis 15 %
" " Star......℘ ream $3 25 }
" " Emery...℘ ream $6 50 @ 11 50 }
New England, same list as B. & A. Flint......dis 15 %
H. B. & M. Roman Flint " " "......dis 15 %
Sash Cord.
Common......℘ ℔ 18 @ 20c. net
Patent......℘ ℔ 24c. net
Silver Lake, Russia Flax......℘ ℔ 55c }
" " White Cotton......℘ ℔ 55c } net
" " Drab Cotton......℘ ℔ 60c }
Raw Hide......dis 15 %
Sash Locks.
Clark's, Nos. 1 and 2, $10·00 per gross......dis 33⅓ %
Ferguson's......dis 33⅓ %
Norwich......dis 25 %
Walker's......dis 10 %
New England......dis 20 %
Sash Weights.—Solid Eyes......℘ ℔ 2c
Sausage Stuffers or Fillers.
Miles......℘ doz $20—dis 30 %
Stow or Perry......℘ doz No. 1, $15; No. 0, $21—dis 25 %
Draw Cut No. 4......each $30 00—dis 20 %
Saw Frames......per gross $18 00—dis 15&10 %
Saw Rods......$10 list, dis 10&10 %
Saws.
Spear & Jackson's......$3 50 to £ gold
Am. Saw Co......new list
Perforated Cross Cuts, all kinds......68c ℘ foot
Inserted Tooth......dis 10 %
All else......dis 12½ %
Disston's Circular......dis 20 %
" Mill......dis 25 %
" Cross Cut......dis 15 %
" other kinds......dis 12½ %
H. W. Peace's Circulars......dis 25 %
" Other kinds......dis 20 %
Wm. McNiece's Hand, Cross Cut and Circular......new list dis 15 %
Wm. McNeice's Patent Pole Pruning Saw......dis 10 %
" " Compass Saw......net.
E. M. Boynton's Lightning......dis 40 %
" " Others......dis 15 %
Wheeler & Clemson Mfg. Co.'s Hand......dis 15 %
" " " Cross-Cut......dis 30 %
Livingston's Butcher and Kitchen......dis 15 %
Livingston's Framed Wood—
Nos. 101 102 103 104 105 106
Per doz $12·00 10·00 12·00 9·00 8·00 6·00 dis 10 %
Saw Sets.
Stillman's Genuine......℘ doz $5·00—dis 10 %
" Imitation......℘ doz 3·25—dis 20 %
Common Lever......per doz $2·00 dis 20 %
Leach's......No. 0, $8·00; No. 1, $15·00 dis 15 %
Nash's......No. 1, $8·50; No. 2, $5·50 dis 20&10 %
Hammer, Hotchkiss......$5·50 dis 10 %
" Bemis & Call's......dis 20 %
" Aiken's Genuine......$15·00 dis 25&10 %
" " Imitation......$7·00 dis 25&10 %
Boynton's......per doz $12·00 dis 30 %
Scales.
Hatch, Counter......℘ doz $36—dis 25 %
" Tea......℘ doz $15—dis 25 @ 30 %
Union Platform......$6·00, $7·00—dis 40 %
Turnbull's......dis 15 @ 20 %
Brown's......dis 25&5 %
Fairbanks'......new list dis 15 @ 20 %
Howe's......dis 15&5 %
Chatillon's Grocers'......dis 25 %
" Eureka......dis 30 %
Universal Family......dis 35 %
Scale Beams.
No. 1 300 to 1200 lbs......90c ℘ cwt }
No. 2 " "......75c ℘ cwt } dis......25 %
Scrapers.
Box, 1 Handle......per doz $2·00, dis 10 %
" 2 "......per doz 6·00, dis 10 %
Foot......dis 60 & 10 %
Ship (common)......per doz $3 00 net
Ship—Providence Tool Co......dis 10 %
Screw Drivers.
Hart, Bliven & Mead......dis 35&10 %
Douglass Mfg. Co......dis 25&10 %
" " No. 1......dis 20&10 %
Disston's......dis 40&10 %
Screws.
Flat Head Iron, List of September 1, 1875......dis 40 %
Round Head Iron " " "......dis 30 %
Flat Head Brass " " "......dis 40 %
Round Head Brass " " "......dis 30 %
Round Head Silver Capped, List March 1......dis 25 %
Hand Rail......dis 55&10 %
Coach or Lag......dis 30&10 @ 40 %
Coach, Patent Gimlet Point, List Jan. 1, 1875......dis 35 %
Bed......list net
Japanned, List of Sept. 1, 1875......Net
Machine—Flat Head, Iron, List Jan. 12, 1875......dis 25 %
" " Brass, " "......dis 15 %
" Round Head, Iron, " "......dis 30 %
" " Brass, " "......dis 10 %
English, Flat Head, Iron; American List, Sept. 1, 1875
Nettlefold & Chamberlain's......dis 30&5 %
Birmingham Sc'w Co......dis 30&5 %
Birmingham Screw Co., Brass......dis 20&10 %
Bench—Iron......dis 60, 10&10 %
" —Wood, Beach......℘ doz $3·00 net
" " Hickory......dis 20&10 %
Hand......dis 25&10 %
Jack—Bell Bottom......dis 15 %
Scythes.
Blood's German Steel, Grass....℘ doz $10 00 }
" Cast " "....℘ doz 11 00 }
" Silver " "....℘ doz 12 00 }
" German " Grain....℘ doz 14 00 } dis $1·50 from list
" Cast " "....℘ doz 15 00 }
" Excelsior and Granger.℘ doz 11 00 }
" Young America......10 50 }
" Silver Clipper......13 00 }
Scythe Snaths......dis 30 %
Sieves.—Mann's Patent......New list net
14 16 18 20 24 30 mesh
Iron...$3·00 3·00 3·25 3·50 3·75 4·75 ℘ doz
Plated. 3·50 3·75 4·00 4·25 4·50 6·00 "
Wood Rims......18 mesh, small, $1·50 per doz, dis 10 %
" "...... " Regular, 1·50 per doz, dis 10 %

Shears and Scissors.
Cast Steel....dis 75&10 %
Cast Iron.... New list July 15....dis 30 %
Heinisch Sons' Trimmers and Scissors....dis 65 %
" Standard quality Shears and Trimmers....dis 40 %
Seymour's Straight Trimmers....dis 60&10 %
" Scissors....dis 50 %
Pruning....per doz $10 00—dis 35 %
Barnard's Lamp Trimmers....per doz $3·75

Sheaves.
Sliding Door, M. W. & Co. list....dis 40&5&2 %
" R. & E. list....dis 50&5&2 %
" Patent Roller....dis 25 %
" " " Hatfield's....dis 30 %
" Russell's Anti-Friction....dis 50&2 %
Sliding Shutter, R. & E. List....dis 50&5&2 %

Shovels and Spades.
Ames....dis 20 %
Birmingham Shovel Co....dis 15 %
Rowland's....dis 25 %
Old Colony....new list dis 10&5 %
Middleboro' Shovel Co....new list dis 20 %
C. E. Jennings....New list dis 30&10 %
Dunning's Shovels and Scoops....dis 20&7½ %

Shovels and Tongs.
Iron and Brass Head, R. & E. list....dis 50&10&2 %
" " Hart's....dis 55&2&10 %
Polished Steel....dis 50&10&2 %

Skates.
Barney & Berry's
N. Y. Club....℘ pair $2·75 }
B. & B. Club...." 3·50 } dis 25 %
All Clamp...." 4·25 }
Rink...." 8·00 }
Florence Steel....$1·00 dis 25 %
" Spring....3·00 dis 30 %
" All Clamp....3·50 dis 30 %
Peck & Snyder's—
No. 1, Blued....per pair $5·00 }
No. 2, Nickel Plated....per pair 6·00 }
No. 3, " " extra..per pair 8·00 }
Clipper Club Blued....per pair 3·50 } dis...25 %
" " Full Pol'd....per pair 4·50 }
" " " and Nickel Plated....per pair 6·00 }
Acme Club Skates.—Nos. 5, 7, 10, 12, 14; Pair $4·00, 5·00, 7·00, 7·50, 8·00 dis 20 %

Slates.
Square Frames, Round Cornered, by case....dis 65&10 %
Less than a case....dis 65 %

Spoke Shaves.
Iron....dis 33⅓&10 %
Wood....dis 30 %
Bailey's....dis 20&10 %

Spoke Shave Irons.
Spear & Jackson's....$5·00 to £ gold

Spoons.
Tinned Iron....dis 10 %
By the case....dis 20 %
Basting....dis 10 %
Britannia....dis 50&5 @ 55 %
" Boardman's, new list....dis 55 %
Rogers & Bro., A 1....dis 50 %
Derby Silver Co....dis 50 & 5 %
Holmes, Booth & Haydens....dis 50 %
Nickel Silver Co....dis 40 %
German Silver....dis 30 @ 33⅓ %
Tin (P. S. & W.)—
Teas....$1·50 ℘ gross, net
Tables....2·75 " net

Stocks and Dies....dis 5&10 %

Stone.
Hindostan Stone....℘ ℔ 6c }
" Axe Stone....℘ ℔ 8c } dis 20&10 %
" Slips....℘ ℔ 10c }
Sand Stone....℘ ℔ 6c—dis 20&10 %
Washita Stone....No. 1, ℘ ℔ 30c net
"....No. 2, ℘ ℔ 25c net
" Slips....No. 1, ℘ ℔ 60c net
Arkansas Stone....No. 1, ℘ ℔ $1·35 net
" Slips....No. 1, ℘ ℔ $2·50 net
Grindstones, Family, J. F. Green & Bro....dis 20 %
" Loring's....dis 10 %

Stove Polish.
Joseph Dixon's....℘ gross, 6 00
Gem....℘ gross $4·25 @ 4·50 net
Gold Medal....℘ gross $6 00 dis 25 %
Rising Sun....per gross $5·75 net

Squares.
Steel....dis 50 %; full cases, dis 50&10 %
Iron....dis 50 %; full cases, dis 50&10 %
Nickel Plated....add $2 50 @ $4 00 ℘ doz net
Try Squares and T Bevels....dis 45&10 %
Star Try Squares and Bevels....dis 30 %
Disston's Try Squares No. 1....dis 20 %
" " No. 2....dis 40 %
" " Improved....dis 20 %

Tacks.
Full Weight American Iron....dis 45&7½ %
Half Weight American Iron....dis 72½&7½ %
Carpet....dis 75 %
Brads American Half Weight....dis 50&7½ %
Finishing Nails.... ⅜, ⅝, ¾, 1, 1¼ in. and over; ℘ ℔.... 25c, 20c, 18c, 14c, 12c dis 7½ %
Trunk and Clout.... ⅜, ⅝, ¾, 1, 1¼ in. and over; ℘ ℔.... 25c, 20c, 18c, 14c, 12c dis 7½ %
Copper Tacks....℘ ℔ 50c—dis 7½ %
Iron Shoe Nails, ℘ ℔ 4-8 and longer, 9½c; 3½-8, 10c....dis 7½ %
Double Pointed....dis 33⅓&10 %

Tapes, Measuring.
American Flask and Cap Co....dis 20 %
Eddy's....dis 20 %

Tea Trays.
American Tea Tray Co....dis 15 %

Thermometers.
Tin Case....dis 50&10 %

Toe Calks.
Winsted....℘ ℔ 18c., dis 10 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion)....dis 20 %
Wood Bottom....per doz $12—dis 25&10 %
All Iron....per doz $19·50—dis 25&10 %

Tinners' Tools and Machines.
P. S. & W....dis 10 %

Traps.
Game, Newhouse....dis 25 %
" Peck, Stow & Wilcox....dis 30 %
" Hotchkiss....old list dis 30 %; new list dis 10 %
" Blake's Patent....dis 30 %
Mouse, Wood Choker....℘ doz holes. 15 @ 16c
" Patent Choker (Union Nut Co.)....℘ doz holes 16 @ 18c net
" Round, Wire....℘ doz $1 50 to 2 00 net
" Square, "....℘ doz 2 00 to 2 50 net
" Cage....℘ doz 2 50, dis 10 %
" Patent Self Setting....per doz holes 25c net

Trowels.
Lothrop's Brick and Plastering....dis 10 %
Disston's Brick and Plastering....dis 12½ %
Rose's Brick....dis 5 %
Brades' Brick....gold, dis 10 %
Worrall's Brick and Plastering....dis 20 %
Garden....dis 25 %

Triers.
Butter and Cheese....dis 25 %

Ventilators (Window).
Nickel and Gilt....per dozen $16·00 @ 18·00

Vises.
Solid Box, Trenton...40 to 160 lbs., 16c.; 160 and over, 20c
" " Wilson's....30 to 160 lbs., 18c; 160 and over, 22c } dis 25 %
" Peter Wrights....16c gold
Parallel, Parker's....dis 20 %
" Wilson's....dis 30&10 %
" Sargent's....dis 55&10 %
" Trenton....dis 15 %
" Backus and Union....dis 25 %
" Merrill's....dis 15 %
" Fisher & Norris....dis 15&10 %
" Buffalo....dis 25 %
" Stevens'....dis 15 @ 20 %
Saw Filers, Bonney's....per doz $20·00 dis 20 %
" Stearn's....per doz $20·00 dis 20 %
" Hopkins'....per doz $17·50 dis 10 %

Wheel Barrows.
Canal (Pugsley & Chapman)....new list dis 15 %
Coal, Garden and Stone (Pugsley & Chapman)....dis 25 %

Well Wheels.
Revised list....dis 60&10 %

Wire.
Brass and Copper....List of Oct. 27, 1875, net
Bright and Annealed....Nos. 0 @ 18 dis 45 @ 50 %
" " " 19 @ 26 dis 50 @ 55 %
" " " 27 @ 36 dis 55 @ 60 %
Coppered....Nos. 0 @ 18 dis 40 @ 45 %
Galvanized, Nos. 0 to 9....℘ ℔ 8 @ 8½c net
Galvanized, Nos. 10 to 18....market list dis 15 @ 20 %
Tinned....dis 25 @ 30 %
Cast Steel....dis 15 @ 20 %
Tinned Broom Wire....dis 35 @ 40 %
Galvanized Telegraph, Nos. 8 and 9....℘ ℔ 9c
Galvanized Telegraph, Nos. 10 and 11....℘ ℔ 10c
" " 12....℘ ℔ 10½c
Annealed Fence, Nos. 8 and 9....dis 50 %
" Grape, " 10 to 16....dis 50 %
Fence Staples....℘ ℔ 7½ @ 8c
Stubs' Steel Wire....$7 00 to £ gold
Judd's Picture Wire....dis 50 %
Clothes Line Wire....per coil 80c. net

Wrenches.
American Adjustable....dis 45 %
Baxter's Adjustable "S"....dis 20 %
" Diagonal....dis 20 %
Collins & Co.'s....dis 45 %
Coes' Genuine....dis 40&10 %
" Pattern (Wrought)....dis 50&10 %
" " (Malleable)....dis 65&10 %
Lindsay's Patent....dis 35 %
Taft's Pattern....dis 70&10 %
Davis Patent Duplex....new list dis 25 %
Bemis & Call's Patent Combination....dis 20&5 %
" " Merrick's Pattern....dis 25&2½ %
" " Brigg's Patent....dis 15&10 %
Aiken's Pocket (Bright)....per doz $10·00—dis 50&10 %

Wringers.

		Less than 2 doz	2 doz lots
Providence	℘ doz	$77·00	$70·00
Reliance	℘ doz	69·00	67·00
Universal—Extra	℘ doz	72·00	70·00
Novelty	℘ doz	71·00	70·00
Sherman	℘ doz	72·00	70·00
Eureka	℘ doz	60·00	58·00
Wringers without Cog Wheel	℘ doz	60·00	58·00

TIN WARE AND TRIMMINGS.

STAMPED TIN WARE, dis 10 %.

COMMON STAMPED WARE, &C.

Bucket Covers.

Quarts	½	1	2	3	4
Inch	4½	5 5-16	6 5-16	6¾	7 11-16
Per gross	$2·00	2·60	3·40	4·25	5·75
Quarts	6	8	10	12	
Inch	8⅜	9⅛	9¾	10 9-16	
Per gross	$6·50	8·00	8·50	11·50	

Cake Box Covers.

	Small.	Medium.	Large.
Inch	11½	12½	13½
Per gross	$15·00	19·00	22·00

Pot Covers.

Inch	7⅝	8¼	8⅞	9¼	9⅝	10¼
Per gross	$5·75	6·00	6·25	6·75	7·25	8·25
Inch	10¾	11¼	11⅞	12¼	12⅞	13¼
Per gross	$8·75	9·50	10·00	13·00	13·75	16·50

Pie, Dinner or Scolloped Plates.

Inch	6	7	8	9	10	11
Per gross	$4·00	4·50	5·50	5·80	8·50	10·50

Deep Pie Plates.
Inch....9, 10
Per gross....$8·50, 10·50

Jelly Cake Pans.
Inch....9, 10
Per gross....$7·50, 10·00

Coffee Pot Covers.

Plain	1½	2	3	4	5	6 qts.
Inch	3	3½	3¾	4½	5	
Per gross	$1·15	1·40	1·60	2·00	2·75	3·00
Rimmed	2½	3	3½	4	4½ inches.	
Per gross	$2·25	2·50	3·00	3·50	4·00	

T. K. Breasts only.

Inch	7½	8	8½	9	9½	10	10½		11
Per gro.	$6·00	6·50	6·75	7·25	7·75	9·50	10·00	12·00	13·00

Grater Plates.
Sheet....¼, ½, 1
Per gross....$5·00, 6·00, 11·50

Scolloped Cake Pans.
Small. Large.
Without Tubes....per gross, $8·00, 11·50
With Tubes...." 10·50, 14·00

Stamped Square Pans.
No....½
Per gross....$7·50, 14·50

Common Square Pans (One Sheet).
Per gross....$11·50

Milk Skimmers (Plain or Pierced).
Per gross....$4·00

Lettered Plates.
Inch....5½, 6
Per gross....$3·25, 4·00

Steamer Bottoms.
Add $1 per gross, or 10c. per doz. to list of Pot Covers.

Tin Stove Pipe Rings.

Inch	4	4½	5	5½	6	7
Plain....per gro.	$4·00	4·50	5·00	5·50	6·00	7·00
Jap'd or Burn'd	6·00	6·50	7·00	8·00	8·50	10·00

Coffee Boiler Lips.
Small. Large.
To Rivet....per gross, $0·80, 1·10
To Solder...." 1·25

STAMPED DEEP AND RETINNED WARE,
Discount 20&10 %.

Plain Stamped Water Dippers.
½ pint. Pint. Quart. 2 quarts. 2½ quarts
Per doz ·90, 1·15, 1·50, 1·65, 2·50

Retinned Milk Pans.

Qts.	½	1	1½	2	3	4	5	6	8	10	12
℘ doz.	1·20	1·50	1·75	2·00	2·25	3·15	3·50	3·85	4·75	5·25	5·75

Dipper Bowls, Plain Stamped—
Pints....½, 1; Quarts....1, 2, 2½
Per doz. ·50, ·75; Per doz... 1·00, 1·25, 1·75
Dipper Bowls Retinned—
Pints....½, ¾, 1; Quarts....1, 2, 2½
Per doz. ·75, 95, 1·05; Per doz.. 1·40, 1·75, 2·25

Pans.
Dish Pans, Retinned Deep—

Quarts	7	8	10	14	17	21	30
Per doz.	8·50	9·50	11·00	18·00	16·00	19·00	30·00

JAPANNED TIN WARE, dis 5 %.
Cannisters, Common....Pound ½, 1, 2, 3; Per gross $10·50, 15·00, 24·00, 30·00
Canisters, Hinged....Pound 1, 1½, 2, 3, 4; Per gross $19·00, 25·00, 32·00, 37·00, 42·00
Canisters, Square....Pound 2, 4, 6, 8, 12, 16; Per doz $3·00, 4·25, 5·00, 5·75, 8·00, 9·00
Candlesticks, Japanned....No. 1, 2; Per gross $8·00, 7·00
Cake Boxes, Round....per nest, $5·25
" Square....per nest, 4·25
Chamber Pails, Japanned
Nos....2, 3, 4, 5
Green, per doz....$8·00, 9·00, 11·00, 13·00
Oak....$9·00, 11·00, 12·00, 13·50
Dust Pans, Corrugated....per gross, $22·00
Box Graters....per gross, $8·75
Molasses Cups.... Pint ½, 1, 2, 4; Per gross $13·00, 16·00, 26·00, 42·00
Lunch Boxes, per doz....7 in $2·00; 8 in. $2 50
Pepper Boxes Japanned..℘ gross small, $3·00; large, $4·00
Toy Banks, House....No. 1, 2; Per gross $7·00, 5·50
Toy Banks, Gothic....No. 1, $6·00, No. 2, 4·00 per gross
Toy Cups, Straight....No. 1, 2, 3; Per gross $3·75, 3·25, 2·75
Toy Cups, Flaring....No. 1, $4·25; 2, $3·75 ℘ gross
Toy Pails, Covered....No. 1, per gross $4·00
Toy Rattles....per gross, $2·00
Trunks, Wire Handled....per nest (5) $1·75
Spittoons, Tin....per gross, $27

PLANISHED TIN WARE, dis 20 %
Tea Pot Handles—P. S. & W....dis 20 %
Stow's Patent Hollow Tea Pot Handles.
No. 1, Small 4¼ inches....per gross, $11·50
No. 2, Medium, 5⅜ "....12·50
No. 3, Large, 6¾ "....13·50
No. 4, Ex. Large 7¾ in., for Wash Pitchers &c....18·00
Solid Iron, Tin Tipped.
No. 10, Small, 4¾ inches....per gross, $9·00
No. 15, Medium, 5½ "....9·50
No. 20, Large, 6½ "....10·75
Stow's Patent Hollow Tea Pot Handles, Adamantine Bronze—P. S. & W
No. 12, Bronzed and Tin-Tipped....per gross, $13·50
Saucepan Handles, Of Best Malleable Iron.
P. S. & W....dis 20 %

Japanned.
No. 1, 5½ inches long....per gross, $3·50
No. 2, 6 "....3·75
No. 3, 6½ "....4·00
No. 4, 7½ "....4·25
No. 5, 8 "....4·50
No. 6, 9 "....4·75

Tinned.
No. 1, 5½ inches long....per gross, $4·25
No. 2, 6 "....4·50
No. 3, 6½ "....4·75
No. 4, 7½ "....5·25
No. 5, 8 "....5·50
No. 6, 9 "....5·75
Japanned....per lb., ·16
Tinned...." ·20

Iron Kettle Ears (P., S. & W.)....dis 45 %
Half gross pairs in a package.

Tinned

Nos.	1	2	3	4	5	6	7	8
Per gross pairs	88c	1·00	1·50	1·75	2·10	2·75	3·75	4·50

Black.

Nos.	1	2	3	4	5	6	7	8
Per gross pairs	75c	88c	$1·25	1·50	1·75	2·25	2·75	4·00

Tinned Tea Kettle Ears.
Nos....4, 5, 6
Per gross pairs....$1·75, 2·10, 2·75

Extra Heavy Tinned Kettle Ears—French Pattern.

Nos.	1	2	3	4	5	6	7
Per gross pairs	$1·00	1·25	1·50	1·75	2·00	2·50	3·00

Malleable Iron Kettle Ears for Coal Hods, &c.
P., S. & W....dis 20 %
No. 10 Small....℘ ℔, Tinned 20c; Black, 16c
No. 20 Medium....℘ ℔, " 20c; " 16c
No. 30 Large....℘ ℔, " 20c; " 16c
No. 40 Extra Large....℘ ℔, " 20c; " 16c
In cases of 100 lbs. each.
Milk Can or Boiler Handles—(P. S. & W.) 4½ in..dis 25 %
Plain, 8c.; Japn'd, 9c.; Tinned, 15c. per lb.; Malleable Clips or Ears to match, Tinned....20c per lb.
Toilet Ware Handles—4½ inches (P. S. & W.)....dis 35 %
Plain with drilled holes, per lb....9c
Plain with Cast "....8c
Plumbers' Scrapers—(P. S. & W)....dis 25 %
Extra quality, length 6 in., per doz....$4·00

METALS.

IRON.—Duty Bars, 1 to 1½ cents per lb., Sheet, Band, Hoop and Scroll, 1½ to 1¾ cents per lb. Provided, that none of the above Iron shall pay a less rate of duty than 35 per cent. Pig, $7 per ton; Polished Sheets, 3 cents per lb.; Wrought Scrap, $8 per ton; Cast Scrap, $6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1½ cents per lb.

Pig Iron—AMERICAN.
Foundry No. 1....℘ ton, $24 00 @
Foundry No. 2...." 22 00 @
Gray Forge...." 20 00 @ 21 00
SCOTCH.
Coltness...." 30 00
Glengarnock...." 31 00
Gartsherrie...."
Eglinton...." 29 50
Summerlee...."

Bar Iron.
Am. Refined, at mill....2·4c. @ 2·5c

Rails.
American, at works, currency....℘ ton 45 00 @ 50 00
Old Rails...." 22 50 @ 25 00

Scrap.
Wrought Scrap...." 30 00 @ 31 00

Bar Iron from Store.
Common Iron.
⅜ to 2 in. round and square.... } ℘ ton $67 50
to 6 in. x ⅜ to 1 in.... }
Refined Iron.
⅜ to 2 in. round and square.... } " 57 50 @ 60 00
1 to 6 in. x ⅜ to 1 in.... }
1 to 6 in. x ¼ and 3-16...." 62 50 @ 65 00
Shafting Iron—4½ to 4 in...." 62 50 @ 75 50
Rods—3-16 to ⅝ round and square...." 110 00 @ 65 00
Bands...." 70 00 @ 72 50
Hoops—⅝ to 2 in...." 130 00 @ 80 00
Swedish Iron.
Ordinary sizes...." 130 00 @ 132 50
Plow size....

Sheet Iron.

	Common American and English.	R. G. American.	R. G. English.
Nos. 10 to 20....℘ ℔	4c	5c	5½c
21 to 24.... "	4¼c	5¼c	5½c
25 to 26.... "	4½c	5½c	5¾c
27.... "	4¾c	5¾c	6c
28.... "	5c	6c	6¼c

Galvanized, 14 to 20, prime, ℘ ℔ 8½c; 2d quality ℘ ℔ 7¾c
" 21 to 24 " " 9¼c " " 8¼c
" 25 to 26 " " 10 c " " 9 c
" 27 " " 10½c " " 9¾c
" 28 " " 11½c " " 10½c
Patent Polished....℘ ℔ 14c
Russia, Nos. 8 to 16...." 15½c
" Stained, No. 1...." 14½c
Belgian....10c
One piece Corrugated Sheet Iron Elbows.

CHARCOAL IRON.

⅜	5	5½	6	7 inch.	
$2·50	3·50	4·50	5·25	6·50 per doz.	

RUSSIA IRON.

4½	5	5½	6	7 inch.
$5·00	7·00	9·50	12·00	14·00 per doz.

COPPER—Duty. Pig, Bar and Ingot, 5c.; old copper, 4 cents ℘ ℔; Manufactured (including all articles of which copper is a component of chief value) 45 % ad valorem.
American Ingot....℘ ℔ 23¼ @ 23½c
English....

SHEATHING, BRAZIERS COPPER, BOLTS, &C.
Braziers Copper, ordinary sizes, over 16 oz., per square foot....31c. ℘ ℔
Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot....33c. "
Braziers' Copper, 12 oz. per square foot....35c. "
Circles less than 84 inch in diameter....34c ℘ ℔
Circles, 84 inch diameter and over....37c. "
Segment and Pattern Sheets....34c. "
Locomotive Fire Box Sheets....31c. ℘ ℔
Sheathing Copper, over 12 oz. per sq. ft....30c. "
" 12 oz. ℘ sq. ft. and lighter...35c. "
Bolt Copper....31c. "
Copper Bottoms, 33c. ℘ ℔....net
No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the square foot.

O'NEILL'S PATENT PLANISHED COPPER.
14x48.
14 and 16 oz. and heavier....37c. By the case, 36c. ℘ ℔
12 oz. and lighter....40c. " " 39c "
Boiler Sizes.
7 in., 14x52. 8 in., 14x56. 9 in., 14x60
14 and 16 oz. and heavier....39c. By the case, 38c ℘ ℔
(And all sizes not over 20 inches wide.)
30x60
14 and 16 oz. and heavier....41c. ℘ ℔
12 oz....44c. "

TINNING.
14x48, by the case....8c. ℘ sheet
14x48, less than case....10c. "
Other sizes not larger than 30x60....2½c. ℘ sq.
Larger than 30x60....5c. "

Brass.
Brown & Sharp's Gauge the Standard except for Fine Wire.

BRASS MANUFACTURERS' PRICE LIST.
October 27th, 1875.
Net cash prices for Roll and Sheet Brass, Wire, &c., for quantities of 100 pounds and over at one time. For less than 100 pounds, three cents additional.

HIGH BRASS
All Nos. to No. 28, and widths 14 in. and under....27c
All Nos. to No. 28, inclusive, and widths over 14 to 20 in., inclusive....30c
Over 20 in. to 30 in., inclusive....33c
½c. ℘ ℔ advance on each No. above No. 28 to 38, inclusive.
All Brass thinner than No. 38 is Platers' Brass, at....45c
Sheets 24x48 in. and all sheets cut to particular sizes and lengths....38c
Printers' Rules....40c
Sheets wider than 30 in. and under 40 in....40c
" " 40 in. and over....42c
Circular sheets, in diam. from 4 in. to 14 inclusive....37c
" " " over 14 " 20, "....40c
" " " " 20 " 30, "....43c
" " " " 30 " 40, "....46c
" " " " 40 in....49c

LOW BRASS.
Four cents ℘ ℔ more than High Brass.
Gilding Metal, 7c, ℘ ℔ more than High Brass.
Platers' or Gold Metal } In Bars....42c; Sawed....45c; Planed or Polished....48c

FOR SLITTING.
Metal, in width 2 in. to ⅛ in. to No. 30, inclusive, 1c. per ℔. advance.
Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per ℔. advance.
Metal, in width 1 in. to ⅛ thinner than No. 30, 3c. per ℔. advance.
Metal, in width ⅛ in. to ¼, to No. 30, 2c. per ℔. advance.
Metal, in width ⅛ in. to ¼ thinner than No. 30, 5c. advance.
Metal, ¼ in. in width and less, 10c. per lb. advance

GERMAN SILVER MARKET METAL AND WIRE

	Market Metal.	Wire.
4 per cent., 12 in., to No. 26	$0·60	$0·80
8 " " "	·70	·90
10 " " "	·90	1·10
15 " " "	1·00	1·35
18 " " "	1·10	1·50
20 " " "	1·20	

German Silver Sheets over 12 in. wide, and weighing more than 10 ℔s., $2 per ℔., net.
Advance 2c. for each additional in., in width above 12 in., and 2c. per ℔. on each No. thinner than Nos. 26 to 36 inclusive.
All German Silver thinner than No. 36 is Platers', at 50c. per ℔. additional.
German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Cop'r.
Nos. 0 to 20	0·30	0·34	0·40
Nos. 21, 22, 23	0·31	0·35	0·42
Nos. 24 and 25	0·32	0·36	0·43
Brass Rods, No. 8 and larger	0·36	0·40	0·46
Wire straightened and cut, smaller than No. 8	0·40	0·44	0·50

Fancy Wire not less than 4 cents per pound advance of Round Wire.
Spring Wire, 2 cts. per lb. advance.

FINE WIRE, BY THE OLD ENGLISH FINE WIRE GAUGE.

	High Brass.	Low Brass.	Gild'g and Cop'r.
No. 26	0·41	0·45	0·51
No. 27	0·44	0·48	0·54
No. 28	0·46	0·50	0·56
No. 29	0·48	0·52	0·58
No. 30	0·50	0·54	0·62
No. 31	0·52	0·56	0·66
No. 32	0·56	0·60	0·71
No. 33	0·60	0·64	0·81
No. 34	0·64	0·68	0·91
No. 35	0·69	0·73	1·08
No. 36	0·78	0·82	1·15
No. 37	0·98	0·98	1·28
No. 38	1·28	1·28	1·58

Ten cents per pound extra for Spooling.

TUBING. ℘ ℔
Plain to No. 20 inclusive, above ⅜ in. to 1½ in....$ ·44
" 1½ to 3 in. inclusive....·38
" above 3 in....·50
Nos. 21, 22, 23, two cents advance on List for each Number.
Nos. 24, 25, 26, four cents advance on List for each Number.
Above No. 26, special rates.
Plain ⅜ inch....·50
" 5-16 "....·60
" ¼ "....·80
" 3-16 "....1·20
" ⅛ "....1·60
All Mandrel Drawn Tubes, 5 cents advance on List Prices.
Fancy Tubing, 4 cents advance on List above Plain.
English, Scotch and Extra Patterns Fancy Tubing to No. 20, 9 cents above Plain.
Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List.
Add to 2 cents ½ cent for each additional cutting under two feet.
All Mandrel Drawn Tubes under ⅜ in., 25 cents per pound advance.

ZINC TUBING.
Plain....·28
Fancy....·31
Scotch and Extra Patterns....·34

GERMAN SILVER TUBING.
4 Per cent....·85
6 "....·95
9 "....1·10
12 "....1·25
15 "....1·40
16 "....1·45
18 "....1·55
20 "....1·65

MISCELLANEOUS.
Common Plain Brass Pail Ears....·39
Hose Pipes, 500 and over....·71
" under 500....·76
Door Rail....·40

SCRAP.
High Brass Scrap, 16 cents.
Low " 18 cents.
Gilding, 20 cents.
Turnings, Filings and Chips, half the price of Scrap.
Orders for Goods on this list received on or after this date, will be filled at the rate herein stated.
Terms—Net cash. No discount allowed. Interest to be added after thirty days.

LEAD—Duty: Pig $2 per 100 lbs.; old Lead, 1½ cent per lb.; Pipe and Sheet, 2½ cents per lb.
Spanish....7c gold
German Refined....6⅞c gold
English....6⅞ @ 7c gold
American....6 @ 6⅛c gold
Bar....dis 10 %....8¾c.
Pipe....dis 10 %....9½c.
Tin Lined Pipe....dis 10 %....16½c.
Sheet....dis 10 %....9½c.
Shot....dis 10 %. Drop, 9½c. Buck, 10½c.

BABBITT METAL.
N. P. U....℘ ℔ 8½ @ 9c
A., 25c.; B, 20c.; C, 15c.; D, 12c. ℘ ℔.

SOLDER....No. 1, 15c.; No. 2, 14c

STEEL—Duty: Bars, Ingots, Sheets and Coils, valued at 7 cents per lb., or under, 2¼ cents; over 7 cents, and not above 11, 3 cents per lb. over 11, 3½ cents per lb. and 10 % ad val. Railway Bars 1¼ cents per lb. Railway Bars, in part Steel, 1 cent per lb. Provided, that Metal cemented, cast or made from iron by the Bessemer or pneumatic process, of whatever form or description, shall be classed as

American Cast Steel.
Tool....15 @ 16c
Spring....10c
Homogeneous....12½c
Tire....13½ @ 13½c
Machinery (round and square)....10 @ 11c
File....11c
Sheet....14 @ 16c
Saw Plate, mill and mulay....14 @ 16½c
Saw Plate, gang and X cut....13 @ 14c
" circular as to size....18 @ 30c

Chrome Steel.
Tool....℘ ℔ 20 @ 21c
Tool, extra fine...." 40 @ 75c
Spring....℘ ℔ 12c and upward
Machinery....℘ ℔ 14c
Hammer...." 15c.
Gun or Homogeneous...." 16c

English Steel.—payable in gold, net.
" Best Cast....℘ ℔ 17½c
" Extra Cast...." 18½c
" Round Machinery, Cast....℘ ℔ 10½ @ 11½c
" Swaged, Cast...." 12½c
" Best Double Shear...." 17½c
" Blister, 1st quality...." 14½c
" " 2d quality...." 13 c
German Steel, Best...." 11½c
do 2d quality...." 10½c
3d quality...." 9½c
Sheet Cast Steel, 1st quality...." 17½c
" " 2d quality...." 14½c
" " 3d quality...." 12½c
File Steel, Flat and ½ Round...." 12½c
" Square and Round...." 12½c
" Mill....13½c
" Taper to 4 inch...." 16c
" Taper 3 and 3½ inch...." 18c

SPELTER—Duty: In Pigs, Bars and Plates, $1 50 per 100 lbs.
Silesian, cash....6⅞ @ 7c., gold
American "....7⅛ @ 11c., currency

TIN—Duty: Plates, Sheets, Tagger and Terne, 1·1c per lb.; Electro-galvanized Plates, 2 cents per ℔; Manufactures of, not enumerated, 35 per cent. ad val. Bars, Block and Pigs, free. Banca, subject to duty of 10 per cent.
Banca....℘ ℔ 24 @ 24½c., gold
Straits....℘ ℔ 20 @ 20½c., gold
English....℘ ℔ 20 @ 20½c., gold

TIN PLATES, CURRENCY PRICES.
I C 10x14, Prime Charcoal....9 @ 9·50
12x12, "....9·50 @ 10·00
14x20, "....9·75 @ 10·25
I X 10x14, "....11·25 @ 11·75
12x12, "....11·75 @ 12·25
14x20, "....12·25 @ 12·75
D C 12½x17 "....8·50 @ 9·00
D X 12½x17 "....10·75 @ 11·25
For each additional X add....2·25

COKE TIN PLATE.

	Best.	2d Quality.	Ordinary.
I C 10x14	$ 8·75 @ 9·00	8·00 @ 8·50	7·50 @ 8·25
I C 12x12	9·25 @ 9·50	8·25 @ 8·75	
I C 14x20	9·25 @ 9·50	8·25 @ 8·75	7·50 @ 8·00

TERNE PLATE.

	Prime Char.	2d qual.	Coke.
I C 14x20	$ 8·25 @ 8·50	8·00 @ 8·25	7·50 @ 8·00
I X 14x20	10·75		
I C 20x28	17·75 @ 18·00	16·25 @ 17·00	16·25
I X 20x28	22.50		
I C 20x200			

ZINC.—Duty: Pig or Block, $1 50 per 100 lbs. Sheet 2½c. ℘ ℔.
Sheet....cask 10½c
"....open 10½c

Old Metals.

(Dealers' Selling Price.)

Copper		@ 20
Yellow metal	14	@ 15
Brass	13	@ 14
Heavy Composition	17	@ 18
Old lead, solid	6	@ 6⅛
Tea lead		5¾
Wrought iron	1⅜	@
Sheet iron	0⅞	@ 0⅞
Cast iron		⅞
Machinery iron	1⅛	@ 1
Zinc	5	@ 5⅛
Pewter, No. 1	17	
" No. 2	10	@ 12
Spelter		@

Steel.

THREE CLASS PRIZE MEDALS, CLASSES 1, 21, 22, reat Exhibition of Industry LONDON, 1851.

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BEST CAST STEEL WIRE, ADAPTED SPECIALLY FOR MECHANICAL PURPOSES;

Also for ROPES, NEEDLES, FISH HOOKS, PINS, CRINOLINE, &c.

BEST CAST STEEL FILES, SAWS, EDGE TOOLS,

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Celebrated Improved Mild Centre Cast Steel, for Taps, Reamers, and Milling Tools, warranted not to crack in hardening Taps of any size.

Swede Spring Steel, especially adapted to Locomotive and Railway Car Springs.

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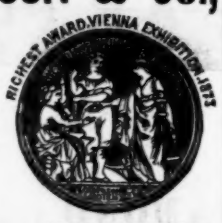

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Files, Saws, Table and Pocket Cutlery, Augers, Shovels, &c.

ALSO STEEL of superior quality for **Turning Tools, Taps, Dies, Drills, &c.**

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All descriptions of **Cast and German**

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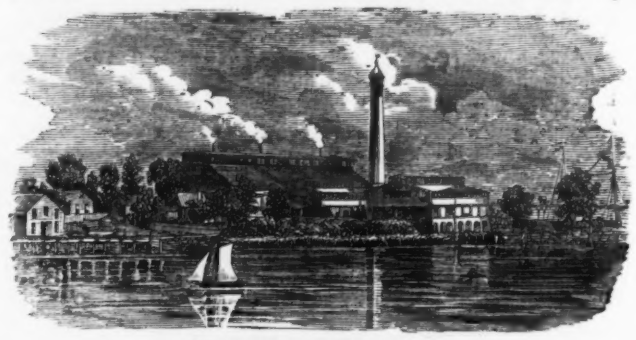

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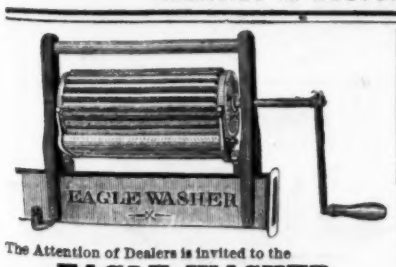
Railroad Iron, Pig Iron, Merchant and Ship Iron,

AGENCIES IN BOSTON AND PHILADELPHIA.



The Attention of Dealers is invited to the

EAGLE WASHER.

It embodies several important new features, a very complete arrangement of parts, and is faultless in construction. Send for descriptive circular and prices to the manufacturers.

OAKLEY & KEATING,
40 Cortlandt St., N. Y.

Clark's Patent Noiseless

Pressure Blowers and Exhaust Fans.

R. W. WILD, Agent,

20 Cortlandt St., New York

Portable and Stationary Engines, Boilers, Grist Mills, etc.

IXL

The Woman's Friend.

The Best Finished & Most Perfect

FLAT IRON ever made.

INTERCHANGEABLE HANDLE and SHIELD COMBINED.

Patented May 4, 1875.

Set No. 1	8 Irons of 5, 6 and 7 lbs.	1 Handle..	$2 00
" 2	8 " 6, 7 and 8 lbs.	"	2 20
" 3	8 " 7, 8 and 9 lbs.	"	2 60

Nickel Plated Irons.....75 cents extra.

Packed in cases of 13 sets or 36 Irons. Send for Illustrated Circular.

BROOKLYN SAD IRON CO.,
85 First Street, Brooklyn, E. D., N. Y.

Hardware.

SPEAR & JACKSON,

Sheffield, England.

MANUFACTURERS OF

Saws, Files, Edge Tools & Steel.

JOHN L. FISHER, Agent,
100 Chambers Street, NEW YORK.

JOHN WILSON'S CELEBRATED

BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

GRANTED A.D. 1766, BY THE CORPORATION OF CUTLERS OF SHEFFIELD, AND PROTECTED BY ACT OF PARLIAMENT.

THE TRADE MARK, IN ADDITION TO THE NAME, IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY

JOHN WILSON.

BUYERS ARE SPECIALLY CAUTIONED AGAINST IMITATIONS OF THE MARK, AND THE SUBSTITUTION OF COUNTERFEITS BEARING THE NAME, "WILSON," ONLY.

Works:—SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750.

ALFRED FIELD & CO.,

Hardware Commission Merchants,

IMPORTERS AND EXPORTERS.

Principal Offices and Warehouses:

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A large line of Birmingham and Sheffield goods in stock at

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OFFICES AND WAREHOUSES:

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Manufacturers and Importers of **Cutlery, Guns, Hardware** and **Railroad Material.**

Proprietors of **TRENTON VISE AND TOOL WORKS, Trenton, N. J.**—Vises, Picks, Mattocks, Grub Hoes, Sledges, Hammers, Bridge Work, Turn Tables, etc.

Proprietors of the **MANHATTAN CUTLERY CO.,** "O. K." Razors.

Sole Agents for **LAMSON & GOODNOW MFG. CO., Shelburne Falls, Mass.**—Table Cutlery and Butcher Knives.

W. & S. Butcher's Files, Edge Tools and Razors, the largest stock in the United States.

Geo. Wostenholm & Son's Knives, Scissors and Razors, the largest stock in the U. S.

John Wilson's Butcher and Shoe Knives.

Peter Wright's and Armitage Anvils.

We always have on hand a full assortment of

German and English Hardware, Cutlery, Guns, Gun Material, Chains, Heavy Goods.

REED & BARTON,

Manufacturers of **FINE**

Electro-Plated Table Ware

OF EVERY DESCRIPTION,

Would call especial attention to their new

Patent China-Lined

ICE PITCHERS.

These Pitchers are made of the finest quality of white metal, heavily plated with silver. They are finely engraved and chased in a great variety of decorations. The linings are of fine stone china. The top is secured to the body of the Pitcher in such a manner that it can be easily detached and the lining removed for cleaning or other purposes.

Many improvements attained are noticeable in these Pitchers. Water and ice standing in them do not come in contact with any metal whatever. They are perfectly clean, and easily kept so. They are perfectly free from all odor or rust. Lemonade, beer, milk, etc., may be kept cool in and drank from these pitchers without endangering health. There can be nothing cleaner or purer for holding liquids than pure, white china. There is no possibility of leakage.

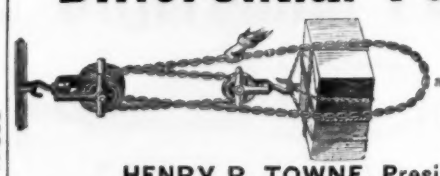
The construction of the Pitcher is such that the lining can be easily replaced at a very small cost.

Factories, Taunton, Mass.

Salesroom, No. 2 Maiden Lane, New York.

WESTON'S

Differential Pulley Blocks,



Also known as

DOYLE'S, HALL'S & BIRD'S,

are now all merged and are controlled exclusively by the

YALE LOCK MFG. CO.

HENRY R. TOWNE, President, Stamford, Conn.

VAN WART & McCOY, New York Agents, 134 & 136 Duane Street.

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FILES AND RASPS

Of every description.

Also,

MACHINE,
MOULDING,
VENEERING,
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RAG,
STRAW,
PAPER, or
TRIMMING

KNIVES.

Moulding Knife

STOCK

Made to Order.

Send for Prices.

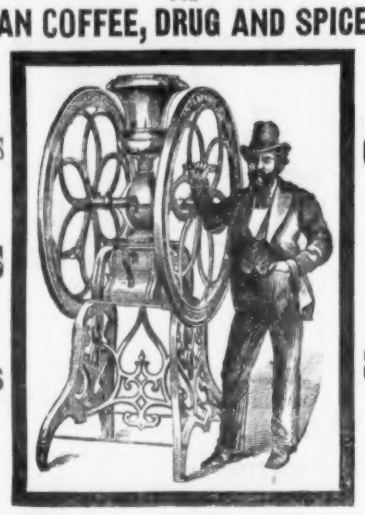
TWO SILVER MEDALS AWARDED

ENTERPRISE MANF'G CO. OF PA.

PHILADELPHIA,

FOR

AMERICAN COFFEE, DRUG AND SPICE MILLS.



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BUNG-HOLE BORERS,

TOBACCO CUTTERS

Cheese Cutters,

CORK PRESSERS

Etc., Etc.

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AGENTS,

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NEW-YORK.

NO EXTRA CHARGE FOR

NICKEL-PLATED HOPPERS WITH EAGLE DOME TOPS.

SEND FOR ILLUSTRATED CATALOGUE.

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Wheeling, West Va.,

Manufacturers of

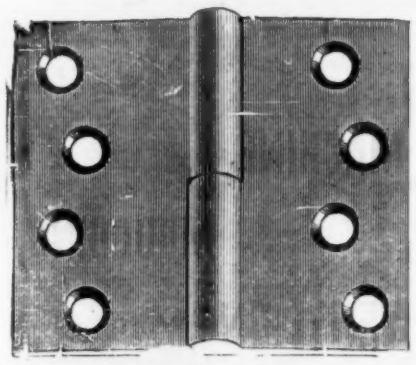
Wrought Butts, Strap & T Hinges, Wrought Hooks, Hasps & Staples, Wrought Repair Links & Washers,

GRAHAM & HAINES, Sole Agents, 88 Chambers Street, N. Y.

AMERICAN BUTT CO.,

PROVIDENCE, R. I., Manufacturers of

Cast Butt Hinges,



AND

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HARDWARE.

New York Warehouse with

Messrs. GRAHAM & HAINES,

No. 88 Chambers Street.

Send for Price List.

QUACKENBUSH, TOWNSEND & CO.,

Hardware, Cutlery, &c.

59 & 61 Reade Street, N. Y.

Depot for

THOS. JOWITT & SONS,

(Sheffield, England,)

FILES and HORSE RASPS.

Rough & Ready

And

CLIPPER SCYTHES,

Warranted.

Manufacturers of the

CHALLENGE DOOR & GATE SPRING.

Patented March 4, 1873.

Agents for

Norwich Lock MFG. CO.

"BEAVER"

(American)

FILES and HORSE RASPS.

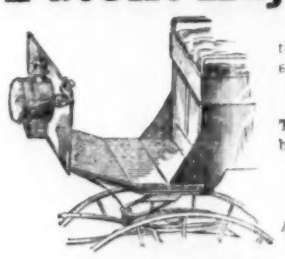
"WIDE AWAKE"

AXES.

BOUDREN'S

Patent Adjustable Dash-Lamp

FOR NIGHT DRIVING,



throws a powerful Light 100 feet ahead of the horse. Burns Kerosene without a chimney for 10 hours after one filling.

Fits any shaped Dash or on any vehicle. Splendid Barn Lantern;

Also good for Deer Hunting.

The light is not affected by wind, rain or jolting. No person should be without one.

Price $6, C. O. D., with privilege of examining. Address,

WHITE MFG. CO., Bridgeport, Conn.

A liberal discount to dealers. Send for Circular.

See illustrated article in *The Iron Age* of Oct. 14.

NEW YORK SCREW BOLT WORKS.

(Estate of R. J. DEWHURST, deceased.)

JOHN COCHRANE, Executive Agent and Manager,

Office and Works, cor. Ave. D and 11th St., N. Y.

Bolts, Nuts, Turnbuckles, Washers, Forgings, &c.

The attention of large consumers solicited.

SAMUEL LORING'S

PLYMOUTH TACK AND RIVET WORKS

PLYMOUTH, MASS., manufacturer of

TACKS, BRADS, NAILS AND

RIVETS.

Swedes and Common Iron Tacks; Leathered, Carpet Brush, Lace and Gimp Tacks; Finishing, Hungarian, 2d, 2d and 3d Fine, Trunk, Clout, and Cigar Box Nails; Black and Tinned Trunk Nails; Zinc, Iron, Copper and Steel Shoe Nails; Brads and Patent Brads; Glaziers' Points &c., &c., &c., COPPER, BRASS AND IRON RIVETS, of all kinds. Coopers' Rivets, from 1d to 6d, in casks of 100 lbs. each. Hose, Belt and Shoe Rivets and Burs. Oval and Countersunk Heads of extra lengths, made to order. SHIP AND BOILER RIVETS OF ALL SIZES AND LENGTHS

COBB & DREW,

Plymouth, Mass.

Manufacturers of Copper, Brass, and Iron Rivets: Common and Swedes Iron, Leathered, Carpet, Lace and Gimp Tacks; Finishing, Hungarian, Trunk Clout and Cigar Box Nails, &c. Rivets made to Order.

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HARDWARE.

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Agent for the Philadelphia Star Carriage and Tire Bolts

FLUTING MACHINES.

The Celebrated K. F. M.

Manufactured for the Trade by

HENRY SOMMER,

8 to 12 Pearl Street, NEWARK, N. J.

Established in 1836.

Shelton Company,

Manufacturers of every variety of

TACKS & SMALL NAILS,

Carriage, Machine, Plow, Stove and Tire Bolts, Coach Screws, Bed Screws, &c.

BIRMINGHAM, CONN

COVERT SNAP.

TRY IT.

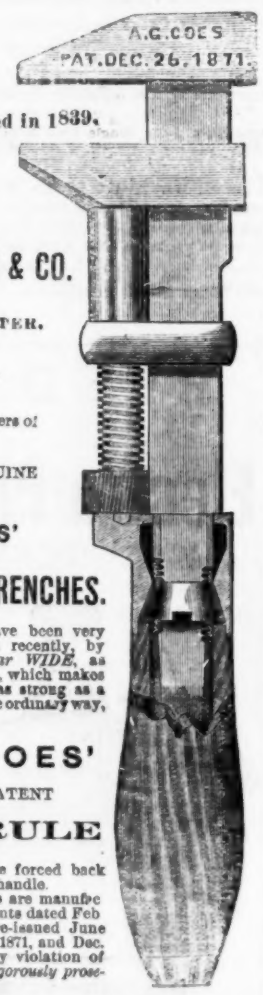
It is the most convenient, durable, safe and reliable Snap ever used. It is easily operated with glove or mitten on. It has a brass coil spring that is four times as long as any other coil spring snap, which will neither rust nor be affected by cold, like steel springs in common use. It is enclosed in the barrel back of the bolt, making a snap which works freely under all circumstances, and without danger of having its parts broken or disarranged. We manufacture all sizes of Harness Snaps and Round Eye Snaps, and Covert's Patent Thimble to go on rope for Cattle and Horse Ties. Also other goods.

Send for price list and circulars.

HOLD BACK & SNAP CO., Troy, N.Y.

A. G. COES

PAT. DEC. 26, 1871.



Established in 1839.

A. G. COES & CO.

WORCESTER,

Mass.,

Manufacturers of

THE GENUINE

COES'

SCREW WRENCHES.

Our goods have been very much improved recently, by making the *Bar WIDE*, as shown in the cut, which makes a 12 in. Wrench as strong as a 15 in. made in the ordinary way, and by using

A. G. COES'

NEW PATENT

FERRULE

Which cannot be forced back into the handle.

☞Our goods are manufactured under Patents dated February 7, 1860, (re-issued June 20, 1871), May 2, 1871, and Dec. 26, 1871, and any violation of either will be *vigorously prosecuted.*

We call particular attention to our new Patent Ferrule, with its Supporting Nut (shown in section in the above cut), which makes the strongest Ferrule fastening known.

A. G. COES & CO.

TUCKER & DORSEY,

MANUFACTURERS,

Indianapolis, Ind.

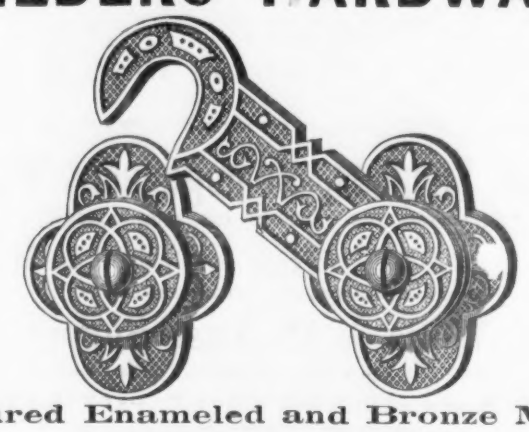
The Hart, Bliven & Mead Mfg. Co.,

18 & 20 Cliff Street, and 243 & 245 Pearl Street, New York.

Factories at KENSINGTON, CONN.

MANUFACTURERS OF

BUILDERS' HARDWARE.



Figured Enameled and Bronze Metal

SHUTTER BARS,

Sash Fasteners, Cupboard Catches, Door Bolts, &c. in great variety.

Our Catalogue and Appendix is now ready. Price $4·50 and charge remitted on receipt of subsequent orders.

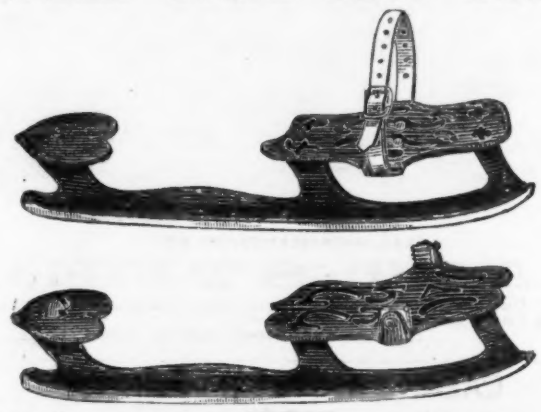
J. CLARK WILSON & CO.,

P. O. BOX 2355.

81 Beekman Street, New York.

Northampton Skate Co.,

SHEFFIELD STEEL CLUB SKATES.



THE BEST IN THE WORLD.

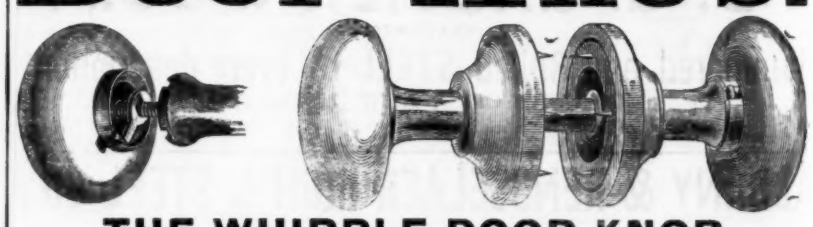
No Buckle to break. NO STRAPS to stop Circulation.

SELF-FASTENING.

FOR SALE BY ALL HARDWARE DEALERS.

WIHPPLE'S PATENT

Door Knob.



THE WHIPPLE DOOR KNOB

Is the only perfect Door Knob Attachment ever invented.

AWARDED A BRONZE MEDAL

At the American Institute Fair, in New York, for 1874.

NO SCREWS USED IN NECK OR ROSES.

Adjusts Perfectly to Doors of Different Thicknesses

WITHOUT THE USE OF RINGS.

The attention of Architects, Builders and Carpenters is specially desired. Circulars fully describing the advantages of this Knob, with Price List, sent on application to

The Parker & Whipple Co.,

WEST MERIDEN, CONN.,

Or 97 CHAMBERS STREET NEW YORK.

MALTBY, CURTISS & CO.,

Manufacturers of

CAPEWELL'S GIANT NAIL PULLER.

Also of

Metal Key, Rosewood & Maple Wood Faucets, Guaranteed to be Tight.

34 Reade Street, N. Y.

CAPEWELL'S LITTLE GIANT TACK HAMMER.

PHILADELPHIA.

(Corrected weekly by Lloyd, Supplee & Walton).

Terms, 30 days. For 60 or 90 days, interest added at 0 per cent. per annum.

Anvils.—Solid Cast Steel.....₩ ℔ 14c
Peter Wright's, (Advanced April 1st.)₩ ℔, gold, 11½c
Wilkinson's..... " 11c
Eagle.....list 11 cents—dis 20 @ 20&10 %
Apple Parers.—Union.....per doz $7 00
Victor..... " 7 75
Domestic..... " 7 75
Reading..... " 7 75
Bay State Paring, Coring and Slicing..... " 15 00
" " Peach Parers..... " 10 50
10 doz. lots 50c. per dozen discount.
Axes.—Mann's Light.....Per doz. $12 00 @ 11 50
Hunt's Light..... " 14 00 @ 12 50
Red Indian, all sizes..... " 12 00 @ 11 50
Red Chiertain, all sizes..... " 12 50 @ 12 00
Crown Prince..... " 12 50 @ 12 00
Augers and Auger Bits.—Pierce's Pat.
Twist Bits.....dis 30 %
Douglass' & Ives' Bits.....dis 40&10 %
Connecticut Valley Auger Bits.....dis 40&10 %
Cook's Bits.....dis 40 10&10 %
Jennings' Bits.....dis 10 %
Bates' Nut Augers.....dis 40&10 %
Douglass' & Ives' Augers.....dis 40&10 %
Watrous' Ship Augers.....dis 10&15 %
Bonney's Pat. Hollow Augers.....dis 25 %
Stearns' Patent Hollow Augers.....dis 25 %
Balances.—
Landers, Frary & Clark's..... } Sold on Morton's new
Morton's..... } List.....dis 50 %
Chattillon's.....
Common Spring with Hook..... ₩ doz $1 88 @ 2 00
Bells.—Bevin Bros. Mfg. Co. Light Hand Bells.....dis 70 %
Common (Tissue Paper Weight).....dis 70&10 %
Swiss Pattern Hand Bells.....dis 50 %
Connell's Door Bells.....dis 50&5 @ 50&10 %
Gt. Western & Kentucky Cow...dis 50&10 @ 50 10&5 %
Boring Machines.—Bates' Mfg. Co., complete with augers.....dis 20 @ 25 %
Douglas Mfg. Co., complete with augers..dis 20 @ 25 %
Common Boring Machines, no Augers.....$4 00 @ 3 75
Angular " " ..... 5 00 @ 4 75
Bolts.—Eastern Carriage Bolts.....dis 75 %
Western " " .....dis 75 %
Philadelphia " " .....dis 60 %
" Eagle, (Coleman's).....dis 60 %
Wrought Shutter, Stanley.....dis 50 @ 50&10 %
Braces.—Barber's.....dis 40&5 %
Packus.....dis50 %
Bartholomew's American Ball...dis 10&10 @ 15&10 %
Snoffard.....dis 50 %
Butts.—Cast Fast Joint, Narrow...dis 25&10 @ 30&10 %
" " Broad.....dis 35&10 @ 40&10 %
Cast Fast Loose Joint.....dis 45&10 @ 50&10 %
" Acorn, Loose Pin.....dis 4 10 @ 45&10 %
" Mayers & Parliament.....dis 35&10 @ 40&10 %
" Acorn Jap'd.....dis 45&10 @ 50&10 %
Wrought Loose Pin.....dis 35 %
" Table Hinges and Back Flaps.....dis 30 %
" Narrow.....dis 30 %
" Loose Joint.....dis 35 %
Parker's Blind Butts.... } Discount 60 %; by the case
Sheperd's " .... } 60&10%.
Garretson's " ....
Clark's " ....
Lull & Porter's Hinges...dis 60 %; by the case, 60&5 %
Garretson's Blind Butts Light No. 0.... } Discount 60 %
" Lull & Porter Pattern } By the case
Cherrytree Blind Butts ..... } 60&10 %
Chains.—German Halter.....dis 30 %
" Coil.....dis 30 %
Galvanized Pump..... net 13 @ 13½c
Best Proof Coil Chain—
¼ 5-16 ⅜ 7-16 ½ ⅝ in.
₩ ℔..... 14 10½ 9½ 9 8¾ 8½ 8c gold
8-16 ½ 5-8 ⅝ 7-16 ½ ⅝ in.
By the cask, 500 lbs., ½c per lb. less Common Chain, ½c per lb. less.
Chisels.—Socket Framing.....dis 60 @ 60&10 %
Socket Firmer.....dis 60 @ 60&10 %
Tang " .....dis 40&10 @ 50 %
Beaty's Framing and Firmer.....dis 2 %
Casters.—Iron Bed.....dis 30&10 @ 40 %
Porcelain Wheel Bed.....dis 40&10 @ 50 %
Iron and Brass Wheel Plate.....dis 40 @ 40&10 %
Porcelain Wheel " .....dis 50 @ 50&10 %
Clothes Wringers.—Universal.....per doz $72 00
Novelty..... " 72 00
Discount on 2 dozen lots. $2 per dozen.
Coffee Mills.—Common Box and Side.....dis 15 %
Patent Box and Side.....dis 15 %
Cutlery.—American Pocket (best).....dis 25 %
Landers, Frary & Clark, J. Russell & Co. and Lamson & Goodnow Mfg. Co, Manufacturers' net prices.
Drawing Knives.—Hart Mfg. Co.'s.....dis 60 %
Adjustable Handle.....dis 10 @ 15 %
Beatty.....dis 15 @ 20 %
Fry Pans.
Tinned.....dis 40 @ 45 %
₩ doz..$3 50 4 00 4 50 5 00 5 50 6 50 7 50 9 00 10 00
No..... 0 1 2 3 4 5 6 7 8
Burnished.....dis 40 @ 45 %
₩ doz..$3 00 3 75 4 25 4 75 5 25 6 00 7 00 8 00 9 00
No..... 0 1 2 3 4 5 6 7 8
Files.
Nicholson Mill Files.....new list
" Bastard.....
" Taper.....
Butcher's Mill (Advanced March 8th)...$5 25 to £ gold
" Bastard..... 5 25 to £ gold
" Taper..... 5 25 to £ gold
Fluting Machines.
E. F. M.—4¼ in. rolls, $5 50.....dis 15 %
" —6 in. rolls, $6 50.....dis 15 %
Mrs Knox—4 in. rolls, $5 75.....dis 20 %
" —6 in. rolls, 7 00.....dis 20 %
Hammers.
Yerkes & Plumb's.....dis 15 %
Hammond & Son's.....dis 15 %
Veree.....dis 20 %
Hatchets.
Beatty's.....dis. 15 @ 20 %
Shingling and Half. { ₩ doz...$7 00 7 50 7 75 8 00
{ No..... 1 2 3 8
Yerkes & Plumb.....dis 15 %
Shingling and Half. { ₩ doz...$7 00 7 50 8 00 8 50
{ No..... 1 2 3 4
Claw..... { ₩ doz..... $7 50 8 00
{ No..... 1 2 3
Hinges.
Strap and T. (Changed March 24).....dis 45 %
Horse Nails. Nos. 6 7 8 9 10
Ausable..... 27 25 24 23 22
Globe..... 28 26 25 24 23
Brundage..... 26 24 23 22 21
Nos. 5 6 7 8 9 10
Putnam..... 32 28 26 25 24 23
On Ausable, Globe and Brundage 1000 ℔ lots.....dis 5 %
Knobs.—Door, Mortise and Rim.
Makes in Combination.....new list dis 45&5 %
Extra discount for cash 2 %
Mineral and Rim.....dis 5 %
Locks and Latches.—Rim and Mortise.....dis 40 %
Extra discount for cash 2 %
Till and Cupboard.....dis 25 %
American Padlocks.....dis 0 %
Extra discount for cash 2 %
Scandinavian Pad Locks.
₩ doz.....$10 80 10 80 12 00 13 00 15 00 18 00 } dis 15 %
No..... 9 9½ 10 10½ 11 11½ }
₩ doz..... $18 00 18 00 22 00 22 00 } dis 15 %
No..... 13 13½ 18 18½ }
Trunk Locks.....dis 5 @ 10 %
Thumb and Rotgens Latches.....dis 25 %
Lanterns.—Square Candle and Oil.....dis 10 %
Globe for Oil.....dis 10 %
" " Kerosene.....dis 10 %
Tubular Lanterns.....dis 10 %
Mattocks.—Long and Short Cutter.....dis 25 %
Western Pattern.....dis 25 %
Pennsylvania Pattern.....dis 15 %
Molasses Gates.
Enterprise Mfg. Co.'s Measuring Faucets.....dis 20 %
Stebbins' Gates.....dis 62½ @ 62½&10 %
Lincoln's " .....dis 40&10 @ 50 %
Landers, Frary & Clark's Petroleum.....dis 15&10 %
Taylor's Petroleum Faucets.....dis 20&10 %
Brass Liquor Cocks.....dis 20&10 %
Meat Cutters.—Dixon's.....dis 20 %
Woodruff.....dis 20 %
Stowe.....dis 20 %
Hale's.....dis 33 %
Stuffers.....dis 20 %
Planes.—Auburn Tool Co., "Beach".....dis 40 %
Second Quality.....dis 50 %
Metallic Plane Co.....dis 25&5 %
Evans Pat. Circular.....net
Plumbs and Levels.
Adjustable.....dis 60&10 %
Non-Adjustable.....G. 60, 10&10 %
Piano Irons.—American.....list net
Butcher's.....gold £, $5 50
Picks.—Philadelphia.....net
Pittsburgh.....net
Rules.....dis 60&10 %
Rakes.—Cast Steel Garden.....dis 40 @ 40&5 %
Malleable Garden.....dis 40 @ 40&5 %
Wood Head Iron Teeth.....dis 40 %
Steelyards.—American Pattern.....dis 15 %
₩ doz.....$5 50 7 00 9 00 10 00 11 00 12 00
No..... 50 100 150 200 250 300
English Pattern.....dis 15 %
₩ doz.....$7 00 9 67 10 67 12 67 14 67 16 67
No..... 50 100 150 200 250 300
L. F. & C. Excelsior.....dis 10 %
₩ doz.....$9 00 10 00 12 00 15 00 18 00 21 00
No..... 50 100 150 200 250 300
Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened..... ₩ doz. $10 00 net
Golden Clipper No. 10, Boxed and Sharpened..... ₩ doz $9 75 net
Green Clipper No. 5, Boxed and Sharpened..... ₩ doz $9 50 net
Common Scythes..... ₩ doz $7 50 @ 9 00
Squares.—Steel and Iron, new list.....dis 50 %
Saws.—Disston's Cross Cut.....dis 15 %
Disston's Hand.....dis 12½ %
W. McNiece's H'd. Cross-Cut & Circ'r, new list..dis 15 %
Boynton's Lightning, new list.....dis 40 %
" Champion.....dis 45 %
Shovels and Spades.
Rowland's Plain Back, Jan. 45d.....dis 40 %
" Back Strap " .....dis 40 %
Oliver Ames & Sons.....dis 20 %
Brady Shovel Co.....dis 20&5 %
Sad Irons.—Richmond (polished face).....per lb. 8½c
Richmond (polished face)..... by the cask " 8¼c
Stone.—Arkansas Oil, No. 1..... ₩ ℔ $
Turkey Oil, No. 1..... "
Washita Extra..... net " 9c
" No. 1..... net " 7½c
" " 2..... net " 6c
..... " 5½c

Screws.—Iron.....new list, sept. 1st, 1875, dis 30 %
brass.....dis 30 %
Spoons.—
Plated.....dis 40&10 @ 50 %
Britannia, Boardmans (new list).....dis 50&10 %
" Parkers (old list).....dis 50 @ 50&10 %
German Silver.....dis 30 %
" Light.....new list dis 35 %
Lalance & Grosjean Iron.....dis 10 %
Springs.—Gray's Door.....dis 60&10 %
Torry's Door.....dis 60&10%
Stocks and Dies......dis 10&5 %
Stove Polish.—Gem.....₩ gross, $5 00
Onyx..... " $5 00
Try Squares.—Winterbottom.....dis 10 @ 15 %
Stanley Rule and Level Co.....dis 45&10 %
Willis Thrall, No. 2.....dis 50&10 %
Disston's No. 2.....dis 40 %
Tacks, &c.—Half Weight Tacks.....dis 72½ %
" " .....
Clout and Finishing Nails.....7½ %
" " by the case...dis 72½&7½ %
Traps.—Genuine Oneida—Newhouse list.....dis 20 %
Imitation " " .....dis 30 %
Vises.—Solid Box, currency..... ₩ ℔ net 14c
Wrenches.—Coes Genuine.....dis 40 @ 40&5 %
Coes Imitation Wrought Bar.....dis 50&50&10 %
" " Malleable Bar.....dis 60&10 %
" " (Kellogg) Malleable Bar.....dis 65&10 %
Tafts Pattern (Wrought Bar).....dis 70 @ 70&10 %
Philadelphia Tool Co.'s Pat. Dupiex.....dis 25 %
" " Improved Baxter.....dis 25 %
" " Adjustable Fork.....dis 25 %
Wire.—No. 0 to 18.....(Advanced April 24th)..dis 42½ %
No. 19 to 25. " " ..dis 47½ %
No. 27 to 36. " " ..dis 52½ %
Coppered 0 to 12.....dis 15 @ 20 %
Tinned Broom Wire.....dis 35 %
Galvanized Wire No. 1 to 18.....dis 40 %

BUFFALO.

Reported by Messrs. Sidney Shepard & Co.
November 8, 1875.

Augers—Snell Mfg. Co.....dis 25 %
Axes—Francis.....11 50
Bits, Auger—Snell Mfg. Co.....dis 25 %
Phœnix.....dis 40 %
Bells, Cow—Yaw's Genuine.....dis 40 %
Braces—Bit, Spofford's Patent.....dis 25 %
Brads, Cut.....dis 50 %
Boards—Stove, Brooks' Pat. dis 35 % 4 mos.; 35&5 % 80 dys
Belting—Rubber.....dis 30 @ 10 %
Leather, new list, oak tanned.....dis 20 %
Brick—Bath (box of 2 doz) Best English.....$1 25
" Rutherford.....$1 00
Can Openers—Sprague's.....dis 50 %
Cases—Parlor Coal Hod.....dis 15 %
Chalk—White, Carpenter's ..... ₩ gross, 57c
Red, Carpenter's ..... " 90c
Chisels—Firmer Socket.....dis 60, 10&10 %
Framing Socket.....dis 60, 10&10 %
Corner Socket Chisels.....dis 60, 10&10 %
Slick's Carpenters'.....dis 60, 10&10 %
Castings—Malleable ..... ₩ ℔ 9½c
Cutters—Meat, "Halex" .....35 %
Egg Beaters—"Peerless".....per doz $8 60
"Centripetal" ..... per doz 5 00
Elbows—Corrugated.....dis 10 %
Adjustable.....dis 20 %
Files—Maischoss Bros.....dis 50 %
Flutes—Geneva Hand..... ₩ doz. $15 00
Freezers Ice Cream—"Champion".....dis 33⅓ %
Hammers—Henry W. Klip's.....dis 10 %
Hinges, Gate—Shepard's.....dis 10 %
Hinges—Window Blind—
Shepard's and Standard.....dis 60, 10&5 %
Hods, Coal—Plain, Black and Galvan'd...new list dis 15 %
Funnel, Black and Galvanized..... " dis 15 %
Fancy and Helmet..... " dis 15 %
Sad Irons.....3½c
Kettles—Brass..... ₩ ℔ 45c
Copper, "Hand Made"..... ₩ ℔, 45c
Enameled.....dis 50&10 %
Knives, Drawing—Oval No. 1.....dis 60, 10&10 %
Razor Blade.....dis 60&10 %
Lanterns "Peerless. ....No. 1 5 10
₩ doz $3 00 $10 50 $18 75 dis 10 %
Tubular..... $11 00
" with Guards.....11 50
Machines—Apple Paring, "Keystone"..... 7 75 ₩ doz
Machines—Boring, Snell's.....dis 20 %
Mills, Coffee—Box and Side, common.....dis 15 %
Box Union and Eagle.....dis 15 %
" American.....dis 20 %
Molasses Gates—"Self Measuring".....dis 20 %
Nails—Clout and Finishing.....dis 7½ %
Shoe.....dis 7½ %
Cut, "Chesapeake," list.....dis 7½ %
Horse, Ausable.....No. 5 7 8 9 10
20 21 23 24 25 22c
" " Pointed & Polished.....add 1c ₩ ℔
" " 1000 lbs.....
" Clinton.....No. 5 7 8 9 10
21 19 18 17 16c
Packing—Rubber.....dis 30 @ 10 %
Paint—White Lead, U. S. Gov't..... ₩ ℔ 8½c
Pans—Dripping..... ₩ ℔ 10c
Rivets—Iron, Black and Tinned.....dis 25&7½ %
Screws—"American Screw Co"—
Flat Head, Iron.....dis 30%
Flat Head, Brass.....dis 30 %
Sieves—Wood, Hoop Iron.....$1 35
Tinned.....1 75
Skates and Straps—White's.....dis 30 %
Spoons, Iron Tinned.....dis 10 %
" by the case.....dis 20 %
Plated Rogers' A No. 1.....add 50 %
Britannia.....dis 50 %
G. S. Hall, Elton & Co.....dis 50&10 %
Squares—Steel and Iron.....dis 30&5 %
Scales—Buffalo Scale Works.....new list 50 %
Fairbanks.....dis 15 %
Stove Polish—Gem..... ₩ gross, $4 50
" Dixon's..... " 6 00
Tacks—Half Weight Am. Iron.....dis 72½&7½ %
Tea Trays.....dis. 15 %
Tools—Machinists' and Tinmens'.....dis 10 %
Vases—Palace Coal.....dis 15 %
Vises—
Parallel, Buffalo...Old pattern, dis. 30 %; new, do. dis 20 %
Ware—French, Tinned and Iron.....dis 20&10 %
Stamped and Japanned.....dis 10 %
Cast Iron Hollow.....dis 40 %
Wire—Bessemer Steel.....dis 10 %
Tin Plates.—Add for each X..... 2 50
10x14, IC. Charcoal... $9 50 | 14x20 C. terne..... $8 75
12x12, " ... 10 00 | 20x28 C. " 19 50
12½x17, " ... 9 00 | 20x28 X. " 24 00
14x20, " ... 10 00 |
Pig Tin—Straits..... 25c @ 26c
Bar Tin..... 27c
Solder—No. 1, Crook's..... 18 c
Sheet Zinc—
"Lasalle"..... 570 ℔ casks
$10 80 10 80 ₩ 100 ℔
Sheets..... $10 30
Babbitt Metal..... ₩ ℔ 12c
Iron Wire—Bright and Annealed.....dis 45 %
Coppered.....dis 40 %
Tinned.....dis 25 %
Tinned Broom, { Nos. 20 21 22 } .....dis 33 %
{ 20c 21c 21c }
Copper—Sheathing 14 @ 16 oz..... ₩ ℔ 30c
Planished..... ₩ ℔ 37c @ 39c
Bottoms..... ₩ ℔ 32c
Bolts..... ₩ ℔ 31 @ 32c
Brazers' Sheets..... ₩ ℔ 31 @ 32c
Sheet Iron.—
18 Common.....$4 05
24 Common.....4 25
26 Common.....4 45
24 W. D. Wood & Co., Smooth Finish.....5 25
Planished..... A. B.
14c 11c
Gen. Russia, No. 1 stained.....16c
" clean.....15c
Galvanized.....dis 33⅓ %

CINCINNATI.

Reported by Sellew & Co., Importers and Jobbers Metals, No. 214, 216 and 218 Main street.
November 1, 1875.

Tin Plate.—I. C. 10x14 Charcoal..... $9 50 @ 10 00
I. X. 10x14 Charcoal..... 12 50 @ 12 50
I. C. Terne 14x20..... 8 75 @ 9 00
I. C. Terne 20x28..... 20 50 @ 21 00
I. C. 20 inches Continuous..... 21 00
Block Tin.—
Pig..... ₩ ℔ 22c
Bars..... ₩ ℔ 26c
Solder.—
A 1..... ₩ ℔ 16c
Roofing..... ₩ ℔ 17c
S. & Co..... ₩ ℔ 19c
Lead.—Pig..... ₩ ℔ 7½c.
Bar..... ₩ ℔ 8¼c
Copper.—
Ingot..... ₩ ℔ @ 24c
Planished..... " @ 38c
Sheathing..... " @ 31c
Copper Drops..... " @ 34c
Sheets, 6 to 7 lb..... " @ 37c
" 8 to 9 lb..... " @ 35c
" 10 to 12 lb..... " @ 33c
" 13 lb. up..... " @ 31c
Copper Bottoms..... " @ 33c
Zinc. Lasc. 500 to 1000 lbs..... ₩ ℔ 10½ @ 10¾c
Case, 100 lbs..... " 10¾ @ 11 c
Slab..... " 7¼c
Brass.—Roll, No. 6 to 20..... ₩ ℔ 30c
Roll, No. 20 to 28..... " 35c
Wire, No. 0 to 20..... " 35c
" 20 to 23..... " 40c
Babbit Metal.—Sellew & Co..... " 38c
Allens'..... " 20c
Market..... " 12c
Antimony..... ₩ ℔ 17c
Bismuth..... ₩ ℔ $4 00
Nickel..... ₩ ℔ $3 50
Russia Iron.—Bundle..... ₩ ℔ 16c
Less than bundle..... ₩ ℔ 18c
No. Stained..... ₩ ℔ 16c @ 16c
Sheet Iron.

	Com. B.	Smooth Fin. S. L. U.	D Re'fd.
15 to 20.....	4c	5 10c	7 10
22 to 24.....	4 20c	5 30c	6 30
26.....	4c	5 50c	7 05
27.....	4 20c	5¼c	7¼
30.....	5¼c		

Galvanized Iron.—Full bundles..... dis 30 %
Nos. 18 to 20..... 13c | No. 26..... 14c
22 to 24..... 15c | 27..... 15c
Bar Steel.—Oliver, ₩ ℔ 10c Crescent, 11c.
Iron Wire..... dis 35 %
Enameled Ware..... dis 50 %

One Piece Corrugated Elbows.....dis 10 %

Charcoal Iron.		Russia Iron.	
4¼ inch.....	₩ doz $2 50	4¼ inch.....	₩ doz $5 00
5 "	" 3 50	5 "	" 7 00
5¾ "	" 4 50	5¾ "	" 7 80
6 "	" 5 00	6 "	" 12 00
6¾ "	" 6 50	7 "	" 14 00

Leader Elbows, Flat Crimp Retinned or Galvanized.—Dis. 10 %

	₩ doz.		₩ doz.
2-inch.....	$1 75	2½-inch.....	$2 75
3-inch.....	2 25	3½-inch.....	3 25
4-inch.....	2 50	4½-inch.....	3 50

Sheet Iron Bread Pans..... ₩ ℔ 8¼c
American Broilers..... ₩ doz. $13 50
Tinners' Machines.....dis 5 %
Sad Irons.—I X L's..... ₩ ℔, 8¼c
Brass Kettles.—Ansonia..... 45c
Dog Irons..... 8 c

PITTSBURGH.

The following are the Card rates of Lewis, Oliver & Phillips, H. B. Newhall, 11 Warren St., New York, Agent.
Iron, standard list assorted sizes, for large orders, specifications to include Bands, small Rounds and Ovals, 2½c. rate, 2 % off net.
Flat Rail (1¼x¼), punched and coun'sunk..4½c ₩ ℔ net
Iron Wedges..... 4½c ₩ ℔ net
Norway Nail Rods..... 8½c ₩ ℔ net
Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)..... 4¼c ₩ ℔ net
Beetle Rings..... 8 c ₩ ℔ net
Fence Pickets—
¾ round, bent to shape, 25c ₩ ft. of fence, less 15 % off net.
Discount off Standard List.
Carriage and Tire Bolts..... 75 % off net
Carriage and Tire Bolts delivered on cars or boats in Pittsburgh.
Stove Bolts..... 20 % off net
Machine and Square Head Bolts..... 40&10 % off net
Coach and Lag Screws..... 40&10 % off net
Bolt Ends..... 40 % off net
Pat. Hot Pressed Square and Hexagon Nuts, small sizes, from 3-16 to ¾ in..... 5½c ₩ ℔ off net
Pat. Hot Pressed Square and Hexagon Nuts, large sizes, from 7-16 to 2 in..... 6¾c ₩ ℔ off net
Washers, all made from new band iron, small sizes, from 3-16 to ¾ in..... 9¾c ₩ ℔ off net
Washers, all made from new band iron, large sizes, from 7-16 to 1¾ in..... 7¾c ₩ ℔ off net
Nuts and Washers in 25 lb. boxes, ¾c ₩ ℔ ex. Nuts and Washers in lots less than one keg each size, ¼c ₩ ℔ ex. Nuts and Washers in 5 lb. boxes, 1c. ₩ ℔ ex. net prices.
Standard Caps, for Plows..... 5¼c. ₩ ℔ net
Iron Harrow Teeth, in lots of 1 ton or more, packed in 200 lb. boxes, 1 in. diam. 3¼c ₩ ℔ net; ¾, ⅞ in. diam. 3½c ₩ ℔ net; ⅞ in. diam. 3¾c ₩ ℔ net.
Patent Headed Harrow Teeth, packed in boxes ¼c ₩ ℔ ex
Skein Bolts, in bulk, in lots of 1 keg or more, ⅝ in. diam. 5c ₩ ℔ net; ¾-16 in. diam. 6c ₩ ℔ net; ⅞ in. diam. 7c ₩ ℔ net. 1c ₩ ℔ extra when less than 1 keg of each size is ordered.
Strap & T Hinges...33¼&10 % off net, delivery as custo'ry
Screw Hitching Rings..... $5 25 ₩ 100 net
Bridge and Roof Bolts—
1 to 2 in. diam. over 8 ft. long..... ₩ ℔ 3½c net
1 to 2 in. diam. from 4 to 8 ft. long..... " 4 c net
1 to 2 in. diam. from 1½ to 4 ft. long..... " 4¼c net
⅞, ¾ and ⅝ in. diam. over 4 ft. long..... " 4¾c net
⅞, ¾ and ⅝ in. diam. from 1½ to 4 ft. long " 5 c net
Bridge bolts with upset ends..... ¼c. ₩ ℔ extra
Wrought iron plates, punched..... 4¼c. ₩ ℔ net
Cast Iron Washers..... ₩ ℔ 3½c net
Duck Nest Tuyere Irons..... $14 50 ₩ doz net

WAGON HARDWARE.

Wagon Box Strap Bolts—

10 in. long by 7-16 at Screw End,	₩ set of 3 bolts..				45c
12 "	½ "	"	"	3 " ..	55c
10 "	9-16	"	"	3 " ..	65c
12 "	9-16	"	"	3 " ..	70c
14 "	9-16	"	"	3 " ..	80c
10 "	⅝	"	"	3 " ..	80c
12 "	⅝	"	"	3 " ..	80c
14 "	⅝	"	"	3 " ..	90c
16 "	⅝	"	"	3 " ..	1 00
18 "	⅝	"	"	3 " ..	1 10
20 "	⅝	"	"	3 " ..	1 20

5c ₩ set for each additional inch over 14 in made. All lengths

In ordering Box Strap Bolts please give diameter at Screw End.

Wagon Box Rods, narrow track, each..... 15c
" " wide track, each..... 17c
Single Tree Irons, ₩ set of four pieces..... 35c
Wrought Iron Bolster Plates, 2¾ in. wide, ₩ set..... 45c
" " 3 " " " 60c
" " 3¼ " " " 55c
" " 3½ " " " 60c
Wagon Brake Ratchets, each..... 14 c
" " " finished with guard, each..40 c
Wrought Hammer Straps, heavy pattern, each..... 18 c
" " " light " each..... 12 c
" Rub Irons, each..... 9 c
Stay Chain Hooks, each..... 5¼c
Double and Single Tree Clips, figure 1, each..... 8 c
" " " 2, each..... 9 c
" " " 3, each..... 11 c
Axle Clips, Round Part ⅝, Flat Part 1¼, each..... 8c
Wagon Clevis, including Pin, complete, each..... 10c
Pole Caps, each..... 24c
Single Tree Hooks, Nos. 1 and 2..... 4½c
Strap Bolts, Rods, Single Tree Irons, Bolster Plates, Brake Ratchets, Hammer Straps, Rub Irons, Stay Chain Hooks, Clevis and Pin, Clips, Single Tree Hooks, and Pole Caps, in lots of 50 sets..... dis 15 %
Wagon Box Staples, 1¾ to 2¼ in. to clinch. ₩ 1000 $11 00 net
" " Bevel Box Iron, to rivet on. ₩ 1000 7 50 net
Neck Yoke Eyes, each..... 4¼c net
" " with ¾ rings, each..... 7¾c net
King Bolts, ⅝, 1, 1¼, and 1¼ in. diam..... ₩ ℔ 4¼c net
Wagon Rivets, ex. large, flat, oval and steeple head, ¼ in. diam. all lengths..... " 8¼c net
Wagon Rivets, 3-16 in. diam., all lengths..... " 9¼c net
" ¾ to 1 inch long..... ₩ ℔ 1c extra
" & Nails, in 5 ℔ paper boxes..... " 1c extra
" in 25 ℔ wood " ..... " ¼c extra
Wagon and Hinge Nails, ¼ in..... ₩ ℔ 17 c net
" " 3-16 in..... " 19 c net
Wagon Rivets and Nails, in less lots than one keg each size..... " ½c extra
Double Tree Plates..... " 5c net
Coupling " ..... " 5c net
Tongue " ..... " 8½c net
Neck Yoke Plates..... " 10½c net
Tongue Cap Iron, 1¾, 2 & 2¼ in. wide, same price ₩ ℔ as Band Iron.
Wagon Chains, Stay, Lock and Tongue, 5-16 in. ₩ ℔ 10½c net. ¼ in., 11¼c. net
Above prices are free on board cars in Pittsburgh. Subject to change of market, without notice.

DETROIT.

(Reported by Messrs. Jewett & Root.)
Nov. 8, 1875.

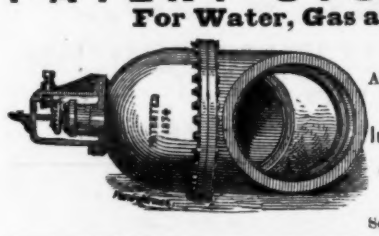
Tin Plate.—Best Charcoal
IC, 10x14..... $ 9 75
IX, 10x14..... 12 25
XX, 10x14..... 14 75
IC, 12x12..... 10 25
IX, 12x12..... 12 75
IC, 14x20..... 10 75
IX, 14x20..... 13 25
XX, 14x20..... 15 75
XXX, 14x20..... 18 25
XXXX, 14x20..... 20 75
DC, 100 Plate..... 9 25
DX, " 11 75
DXX, " 14 25
DXXX " 16 75
DXXXX 100 Plate.. 19 25
IX, 14x14..... 19 25
IC, 10x14 W..... 9 25
IX, 10x14 W..... 11 75
Roofing Tin.—Best Char.
IC, Terne, 14x20..... $ 9 00
IX, " 14x20..... 11 00
IC, Terne, 20x28..... 19 00
IX, " 20x28..... 24 00
Coke Tin.—
IC, 10x14 Coke..... $ 9 00
IX, 10x14, Coke..... 11 50
IC, 14x20, " 10 00
Solder.—No. 1..... 16c
No. 2..... 15c
Pig Tin.—
Large Pigs..... 34c
Small Pigs..... 35c
bars..... 36c
Bright Wire.
65 lbs. in bdl.....dis —
Copper.—
Sheathing..... 31c
Copper Bottoms..... 32c
Planished Copper.—
Sheathing, 14x48..... 35c
Boiler Size, No. 7..... 40c
" " No. 8..... 40c
" " No. 9..... 40c
Sheet Iron.—
No. 18 Am. Com..... 4 00
No. 24 Am. Com..... 4 20
No. 26 Am. Com..... 4 40
No. 27, Am. Com..... 4 60
W. D. WOOD'S & CO.'S SHEET IRON.—
Nos. 15 to 20 Smooth $5 00
" 21 to 24..... 5 20
" 25 & 26..... 5 40
" 21 to 24 Charl'..... 6 70
" 25 & 26 " 6 90
RUSSIA.
Genuine..... 17c
Imitation..... 14c

Eames' Pat. Molding Machine
FOR METAL CASTINGS.

The above machines have recently been introduced in several large iron foundries in this country, where they have given entire satisfaction. Among the advantages are:
1st. A great saving in the cost of producing castings.
2d. A man can learn to mold with the machine in less than 30 days' time.
3d. The castings produced will be found more perfect, less poor work, and more uniform than if molded by the old method.
The machine is adapted for either Iron or Brass Castings. *Price Reduced.* For further particulars, send for Circular. Address,

P. & F. CORBIN,
EXCLUSIVE LICENSES,
Also Manufacturers of *Architectural Bronze Work, Locks, Hinges and fine Builders' Hardware generally.*
New Britain, Conn. New York, 87 Chambers St.

Armstrong & Hutchinson,
Manufacturers of
PATENT STOP GATES
For Water, Gas and Steam,



From 2 in. to 50 in. diameter.
Also, **Fire Hydrants, Single and Double Nozzle.**
Improved Boiler Feeders, Etc.
Cor. Park Way & Sandusky Sts., ALLEGHENY, PA.
Send for Circular.

G. W. Bradley's Edge Tools.

Butchers' Cleavers,
Butchers' Choppers,
Axes and Hatchets,
Grub Hoes and Mattocks,
Mill Picks,
Box Chisels and Scrapers,
Ring Bush Hooks,
Axe Eye Bush Hooks,
Socket Bush Hooks,
Watt's Ship Carpenters' Tools,
Carpenters' Drawing Knives,
Coopers' and Turpentine Tools.
FOR SALE BY
N. WEED, 4 & 6 Gold St., N. Y.

CENTENNIAL
SELF-LUBRICATIVE
Hemp Piston Packing
FOR
Locomotives, Steamships, Stationary Engines,
Hot or Cold Water Pumps.
Recommended by Master Mechanics and Engineers, as the cheapest and best in market. **No more Extortionate Prices. No more Fluted Rods**—but a good article at fair price.
JOHN CANFIELD & CO.,
SOLE MANUFACTURERS,
Office, 1321 Fairmount Ave., Phila.
PATENT APPLIED FOR. Send for Circular.

THE NATIONAL STEEL TUBE CLEANER.
Patented July 28, 1874.

Guaranteed to clean better, last longer & work easier than any in the market.
REMOVES ALL
Carbon and Scale from the Boiler Tubes.
ADOPTED AND IN USE BY UNITED STATES NAVY.
For sal by dealers.
THE CHALMERS SPENCE CO. Foot of East 9th St., New York, Agents for the United States.

GOLD MEDAL
Non-Extensible Razor Belt.
PATENTED JULY 25, 1871.
RE-ISSUED MAY 13, 1873, and JUNE 9, 1874.
In this Strap the liability of the leather to stretch and become loose and porous is prevented by the use of a patented non-extensible base, which supports the leather and secures
PERMANENT ELASTICITY.
We make this style with single rod, double rod, and wood frames, and intend that it shall, in quality compare favorably with our other well known brands.
BENJAMIN F. BADGER, Manufacturer,
Badger Place, Charlestown, Mass.

BILLINGS & SPENCER CO.
MANUFACTURERS OF
CLAMP, DIE AND COMMON
LATHE DOGS.

Vienna, 1873.

For Progress.

FIRST CLASS ARTICLES,
and something that every machinist and Tool Maker will appreciate.
Also, all Descriptions of **Wrought Iron & Steel**
DROP FORGINGS.
For Machine Handles, Lathe Wrenches, Spinning Rings, Marlin Spikes, Clinch Rings, Thumb Screws, Thumb Nuts, and Parts of Drill Chucks, Sewing Machines, Guns, Pistols, and Machinery Generally.

TRADE MARK.
THE BILLINGS PATENT SEWING MACHINE SHUTTLE,
Thirty Varieties now made, Forged Solid from Bar Steel and Cold Pressed. Also,
Barwick Wheatcroft

Patent Self-Adjusting PIPE WRENCHES, of all sizes.
Illustrated Circulars and Price List sent to any order on request. Lawrence St., Hartford, Conn.

AMERICAN TWIST DRILL CO.,
Woonsocket, - - RHODE ISLAND.
Sole Manufacturers of the celebrated
Diamond Solid Emery Wheel

Fast Cutting—Free from Glazing—It is the best Solid Emery Wheel.

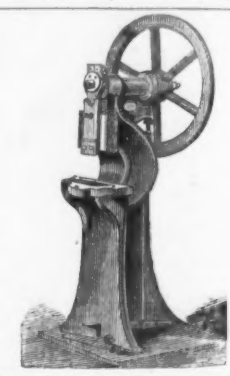
Prices: 10x1, $2·90; 14x2, $9·75; 18x2½, $20·00; 24x3, $42·00.
All other sizes at proportionate prices. State diameter of Holes in your orders for Wheels.
MANUFACTURERS OF
PATENT EMERY WHEEL MACHINERY,
And Automatic Knife Grinders
For the rapid and perfect grinding of Planer, Paper Cutting, Leather Splitting and other long Knives.
These goods are unsurpassed for elegance of design, workmanship, capacity and durability. First premium awarded by American Institute, N. Y., 1870 and '73; Medal and Diploma by M. C. M. A., Boston, 1874.

STURTEVANT
Pressure Blowers, Fan Blowers and Exhaust Fans.
10,000 SOLD IN SIX YEARS.
SEND FOR ILLUSTRATED CATALOGUE.
B. F. STURTEVANT, 72 Sudbury Street,
BOSTON, MASS.

☞ Two First Premiums awarded by Franklin Institute Exhibition of 1874.
C. VAN HAAGEN & CO.,
2341 and 2343 Callowhill Street, PHILADELPHIA, PA.
Manufacturers of Latest Improved Machine Tools, Rotary Shapers, two sizes, Iron Planers, all sizes, Horizontal Drill Attachments, for upright power drills, Self-feeding Portable Drills, hand or power, Expansion Boring Bars, five sizes, Universal Slide Rest, for taper work, Twist Drill Sharpening Machines, automatic and adjustable in every direction, Noiseless Friction Gears, for transmitting up to thirty horse-power.
Send for Descriptive Circulars.

BUSH HILL IRON WORKS,
Corner 16th & Buttonwood Streets
PHILADELPHIA.
JAMES MOORE,
(Successor to MATTHEWS & MOORE,)
Engineer, Machinist, Founder and Boilermaker
CASTINGS of every description.
ROLLING MILL AND FURNACE EQUIPMENTS COMPLETE
Rolls Turned for Rails, Beams, Angles, and all shapes for Iron, Steel, or Composition Metals.
Sugar Mill, Saw Mill and Grist Mill Machinery,
AND MILLWRIGHTING IN GENERAL.
BOILERS—FLUE, TUBULAR AND CYLINDER, and all kinds of TANK AND PLATE IRON WORK.

CLARK TOMPKINS
Manufacturer and Patentee of
UPRIGHT ROTARY
Knitting Machines,
Cone Winders for Hosiery Yarns,
NAPPERS FOR HOSIERY GOODS,
Stop Motions & Alarms for Knitting Machines,
Flock Cutters, and Flock Renovators.
EXTRA PARTS FURNISHED PROMPTLY.
☞ I am also prepared to furnish anything in the line of Gear Cutting from 5½ feet to ⅛ of an inch in diameter, any shape of tooth desired; Racks, Worms, Worm Wheels, Screws any size or number of threads to the inch, Wood Planing, Iron Planing, Large Lathe Work, Gear Cogging, Shafts, Hangings and Pulleys, also all kinds of Mill Work, Jobbing, and Machinery in general.
Shop, Foot of Cypress St., Troy, N. Y.
Particular attention paid to Experimental Machinery. We aim to maintain our reputation for doing work well.



The American Institute, at their Fair in New York, will exhibit
A NEW
Drawing Press
FOR THE USE OF
Tinners & Brass Workers.
ALSO,
OTHER TOOLS
Manufactured by
The Stiles & Parker PRESS CO.
Of Middletown, Conn.
Mr. Stiles will meet parties by appointment made by letter or otherwise.
Exhibition opens Sept. 8th, and closes Nov. 13th, 1875.

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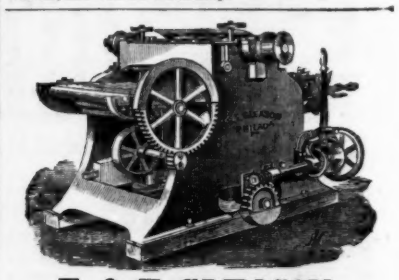

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BOSTON.

(Reported by Macomber, Bigelow & Dowse, 156 to 164 Oliver St.)

Augers.—Watrous Ship....dis 10 %
L'Hommedien Ship....dis 15 %
Axes.—Forester's Favorite, Bronzed....$11 50
Blue Jackets, Blue....11 00
Excelsior, Black....10 50
Chopper's Pride, Bronzed....10 50
Red Cross, Red....9 00
Red Cross, Handled....12 00
Boy's Handled Blue Jackets....11 00
Axe Handles.—Wadleigh's Oak—
A (Extra) $2·50. B (No. 1) $2·00. C (No. 2) $1·50 ℔ doz
Bells, Sleigh—
Fancy Body, Patent Leather, Cloth Bound, White Metal, 30, No. 1....$1·70
Fancy Body, Patent Leather, Cloth Bound, White Metal, 36, No. 1....1·80
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 30, No. 1....·38
Fancy Body, Patent Leather, Leather Bound, Extra Tinned, 36, No. 1....2·50
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 30, No. 1....3·38
Fancy Body, Patent Leather, Leather Bound, Silver Plated, 36, No. 1....3·50
Shaft, Strap, White Metal, House Bells, extra, 6, No. 1....per pair, 80c.
Common, 6, No. 1...." 45c.
Blind Hinges.—
Orr or Washburn's....per hundred sets $9 50
Blind Fasts.—
Orr or Washburn's....per hundred set $6 00
Bolts.—Carriage, Phila., "Girard Works....dis 50&10 %
Borax.—Best Refined....℔ ℔ 15c
Borers.—Angle, Backus'....dis 30 %
Boring Machines.—Angle....each $4 75
Common, Snell's quality....each 3 75
Braces.—Barber's....dis 40&5 %
Backus'....dis 50 %
Spofford's....dis 50 %
Amidon....dis 50 %
Brackets.—Star Bronzed....new list net
Star Japanned....new list net
Store Shelf....new list net
Brass Faucets.—L. F. & C....dis 25&10 %
Butts.—Union Drilled Loose Joint....dis 45&10 %
" " Wire Fast Joint....dis 25&10 %
" " Acorn Loose Joint....dis 45&10 %
Brass Butts....dis 30 %
Wrought Table Butts and Back Flaps....revised list, dis 30 %
Wrought Narrow Butts....reduced, dis 30 %
Can Openers—Sprague's....dis 50 %
No. 1, Iron Handle....$4·00
No. 2, Wood Handle....4·50
Cards.—
Curry Cards, No. X, per doz., $0·55....dis 30 %
Horse " No. X, " 0·80....dis 30 %
Wool " No. 3X, " 2·50....dis 15 %
Cotton " No. 10, " 3·50....dis 10 %
Cartridges.—U. S. Cartridge Co....dis 60 %
Chisels.—"Buck Bros." Shank Goods....add 22½ %
Socket....add 25 %
Churns.—Lightning—
Redheffer patent.... 3, 4, 5, 6 gall per doz $22 00, $27 00, $31 50, $36 00
Coal Hods....dis 40 %
Fancy Japanned, No. 4, 15 in., $8·00; 5, 16 in., $9·00; 6, 17 in., $10·00.
Fancy Galvanized, No. 4, 15 in., $11·50; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Perfection, Galv'd, No. 4, 15 in., $15·00; 5, 16 in., $16·00; 6, 17 in., $17·00.
Morning Glory, Jap'd, No. 4, 15 in., $12·00; 5, 16 in., $13·00; 6, 17 in., $14·00.
Morning Glory, Galv'd, No. 4, [illegible] $15·00; No. 5, 16 in., $16·00; No. 6, 17 in., $17·00
Compasses and Dividers.....dis 40 %
P. S. & W....dis 30 %
Cordage.—Manila (usual trade [illegible])....℔ ℔, 14½c
American Tarred Hemp Lath Yarn....℔ ℔, 10c
Corn Hooks....per doz $2·75
Cow Ties....dis 10 %
No. 30, Open Ring, 3 foot, No. 6, with Toggle....$3·70
No. 35, " 3 " No. 6, " Snap....3·90
No. 40, " 3½ " No. 6, " Toggle....4·00
No. 45, " 3½ " No. 6, " Snap....4·30
No. 50, " 4 " No. 5, " Toggle....4·70
No. 55, " 4 " No. 5, " Snap....4·80
No. 60, " 4½ " No. 4, " Toggle....5·20
No. 65, " 4½ " No. 4, " Snap....5·40
Crow Bars.—Iron, Steel Points....℔ ℔, 5½c
"Sweet" Steel Bars....℔ ℔ 11c
Brown's Steel Bars....℔ ℔ 10c
K. P. & Co. Extra Drill Steel....℔ ℔ 15c
Dividers.—Cook's Nickel Plated....dis 15 %
Door Springs.—Stimson's Patent.—
No. 7, Light inside doors, $12·00....dis 25 %
No. 8, " outside " $18·00....dis 25 %
Torrey's....$3·00
Gem....1, $3 50; 2, $2 50; 3, $2 00 ℔ doz
Egg Beaters.—Lightning, Redheffer pat., pints, $5 50; 1 qt., $8 00; 2 qts., $12 00 per doz.
Emery.—Alden....℔ ℔ 6½c
Wellington Mills....℔ ℔ 10c
Files.—Earl Smith & Co.'s English....$5 to £ gold
American....$5 to £ currency, less 15 %
Nicholson....new net list
Wheeler, Madden & Clemson....$5 to £
Stubb's Tapers, genuine, 3 in., $1·50; 3½, $1·62; 4, $1·88; 4½, $2·13; 5, $2·50.
Funnel Irons.—$2·50, 2·50, 2·50, 3·25 per doz; 5, 5½, 6, 7 inch.
Deep Flange.—$3·50, 3·75, 4·00; 5, 5½, 6 inch.
Hammers.—Maydole....dis 12 %
M., B. & D., solid cast steel, adze eye, No. 1, $10; 1½, 8·75
" " " " " bell face, No. 1, $11; 1½, $9·75.
Hangers & Rollers.—Novelty....dis 30 %
Anti-Friction....$1 25 per pair—dis 30 %
Hatchets.—Underhill Edge Tool Co....dis 15 %
C. F. Dowse, warranted Cast Steel—
Shingling....0, $4·75; 1, $5·25; 2, $5·75
Claw....1, 5·75; 2, 6·25
Lathing....1, $5·50
Axe Pattern....1, $7·00; 2, 7·50
Broad....0, $5·75; 1, $6·50; 2, $7·50; 3, $9·25; 4, $10·75; 5, $12·75; 6, $14·75
Hinges.—Strap and T, Stanley Works....dis 40 %
Plate, Loose and Fast Joint....℔ ℔ 6c
Wrought Screw Hook....℔ ℔ 6½c
Knobs.—Young's Imp. Silvered Glass....dis 45 %
Lanterns.—Tubular No. 0....$ 9·50
Guarded, No. 74, (with kerosene oil and candle burners)....5·50
Anti-Tubular....8·00
Lead.—Sheet, 9½c.; Pipe, 9c....less 10 %
Locks.—Norwalk Lock Co....reduced list, dis 40&5 %
Mattocks.—
K. P. & Co., axe finish, long cutter....$13 00—net
Short cutter....12 75—net
Meat Cutters.—"Miles's" Challenge....dis. 20 %
No. 1, $22·00; 2, $30·00; 3, $40·00.
Metal.—Babbitt, No. 1, 35c; 2, 25c; 3, 16c; 4, 15c ℔ ℔
Nails.—10d and larger....$3 25 net
Nail Pullers.—Little Giant—Small....per doz., $22·00
Little Giant—Large...." 30·00
Padlocks.—Wilcox....reduced list, dis 40&5 %
All Brass, 2½ inch, 2 keys, job lot....$9 00
Paper.—Tar'd Sheathing....℔ ℔ 2 c
Dry Sheathing...." 3 c
" " "Beaver Brand" Rosin Sized.." 3½c
Tar'd " " "...." 3 c
Felt " " "...." 4½c
Virginia Cane Fibre....4½c
Picks.—K. P. & Co., Solid Eyes....5 to 6, 6 to 7; $9 00, $9 50
Pins.—Universal Hat and Coat all wood—
2 in....℔ gross $2 50; 3 in., 3 50; 4 in., 4 50—dis 15 %
Potato Digger.—
"Partridge," 6 square tine....℔ doz $12 00
Shumway & Co., 6 round tine....℔ doz 9 00
Pulleys.—Axle.
Frame Pol. Wheel....No. 150, 20c., 1½ in.; 16, 38c., 2 in.
Common Axle....No. 18, 34c., 1½ in.; 26, 40c., 2 in.
Milled Axle....No. 2, 42c., 1½ in.; 2, 50c., 2 in.
Nashua Pat. Axle Bronzed Face...1½ in., 80c; 2 in., 90c
Cast Steel Axle....2 in., $1·00
Pulley Blocks.—"Best Boston Make"....net
Common Strapped Blocks—

	4	5	6	7 inch.
Single,	75c.	88c.	$1·00	$1·18 each.
Double,	$1·00	1·12	1·25	1·60 "

Inside Iron Strapped Blocks—

	5	6	7	8	9	10 inch.
Single,	$1·00	1·13	1·35	2·00	2·25	2·75 each.
Double,	1·88	2·30	2·63	3·63	4·00	5·00 "

Inside Iron Strapped Blocks, with Patent Roller Bushings—

	5	6	7	8	9	10 inch.
Single,	$1·25	1·50	1·65	2·50	2·75	3 50 each.
Double,	2·50	3·00	3·38	4·63	5·00	6·50 "

Plated Ware.—Rogers Bros....dis 50 %
Plumb & Levels.—"Davis" Pat. Adjustable—
No. 1, Iron and Wood Center Levels....dis 50 %
No. 2, First Quality Levels....dis 60&10 %
No. 3, Iron Pocket "....dis 35 %
No. 4, Level and Plumb Glasses....dis 60&10 %
No. 5, Iron Pocket Levels, per square and straight edge....dis 50&10 %
No. 6, Improved Iron Bench Planes....dis 20&10 %
Pocket Knives.—Conn. Cutlery Co....new net list
American Shear Co....new net list
Rail Barn Door.—For Novelty and Anti-Friction Hangers....per foot 7c., dis 30 %
Rivets.—Black....dis 25 %
Carriage, oval head, Nos. 3, 4, 5, 6, 7, 8, dis 7½ %; 13, 13, 14, 14, 15, 16c ℔ ℔
Rubber Moldings.—"Harmon's"....dis 10 %
No. 2, for Windows....per foot, 5c
No. 3, for Doors....per foot, 10c
No. 4, "....per foot, 12c
Sad Irons.—Bless & Drake....℔ ℔ 4c
Sand Paper—0 to 2, $4·25; 2 to 3, $4·75....dis 10 %
Saws.—*Hand and Panel*—
Wheeler, Madden & Clemson's, same list as "Disston's"....dis. 15&5 %
Disston's....dis. 12½ %
Cross Cut—
Wheeler, Madden & Clemson X Cuts....per ft., 37c
" " " "Star" X Cuts. " 60c
" " " Champion X Cut. " 50c
" " " One Man X Cut..each, $2·25
Boynton's genuine Lightning X Cut....per ft., 50c
" " " One Man X Cut..each, $2·00
Circular—Wheeler, Madden & Clemson's....dis. 25 %
Mill— " " "....dis. 25 %
Screws.—Am. Screw Co., new list Sept. 1st....dis 30 %
Aiken's....dis 30 %
Scythe Stones.—
"Willoughby Lake," first quality....℔ gross $6·50
" second quality...." 3·00
Shovels.—O. Ames....dis 20 %
M. B. & D....dis 20 %
Snow, Malleable Iron Tip, D Handle—Agents for New England....$6·50
Snow, Malleable Iron Tip, long Handle—Agents for New England....5·50
Sifters.—Coal, Rice, &c....$12 00
Spading Forks.—M. & E....dis 25 %
Stone Pickers.—"Partridge," original...℔ doz $15 00
Tools.—Aiken's Pattern, 20 in set; Parr's, $17 5 per doz
Traps.—Oneida....dis 25 %
Blake's....dis 50 %
Vises.—K. P. & Co.'s Solid Box. Blacksmith....℔ ℔ 13c
Parker's Parallel....dis 10 %
Backus....dis 25 %
"Howards," Parallel....dis 20 %
Wardrobe Hooks.—Wire to drive....℔ gross $1 00
Weather Strips.—"Harmon's"....per doz $5, dis 10 %
Weights.—Window Weights....℔ ℔ 2c
Wedges—Axe....℔ doz 35c
Wire.—
Eureka, in spools, No. 28 to 40 assorted...℔ gross $3 50
Wire Netting.—Clinton Wire Cloth Co., Green, Drab or Black....℔ ft 5½c
Wrenches.—Genuine Wrenches, G. A. Coes..dis 40&5 %
Walton....dis 50 %
Wringers.—
Novelty and Universal } Tub No. 2 } ......Less than doz, $72 00; ......2 doz or more, 70 00
Bench A... less than 2 doz $86 00; 2 doz or more $84 00
" B... " " 94 00 " " 92 00
" C... " " 110 00 " " 107 00
Eureka..... " " 60 00 " " 58 00
Withington, Cooley & Co.—
Hoes, Rakes, Forks, &c....dis 33⅓ %

Boston Metal Market.

(Corrected by Fuller, Dana & Fitz, 110 North Street, Boston, Importers and Commission Merchants.)

September 1, 1875.

Iron.—Best Refined Bar Iron....℔ ton $57 50
"Burden Best" " "...." 95 00
Swedish Bar Iron....gold " 110 00
Norway Shapes....gold " 122 50
Norway Nail Rods....gold " 130 00
Sheet Iron, American....℔ ℔ 4½c
" " Galvanized...." 9 c
" " Russian....gold " 13½c
Plate Iron, C. No. 1...." 3½c
Iron Rails....℔ ton $50 00
Steel Rails...." 75 00
Pig Iron, Foundry, No. 1 extra...." 27 00
" " No. 2 extra...." 25 00
" Gray Forge...." 28 00
" Scotch...." 30 00 @ 32 00
Wrought Scrap Iron...." 31 00
Old Rails...." 38 00

Steel.—	℔ ℔	German.... ℔ ℔	9½c
Eng. Tool, gold	15½c	Spring....	8 c
American Tool	14½c	Tire....	6 c
" Mach	9½c	Sleigh Shoe....	4½c
Bessemer....	7 c	Toe Calk....	7½c
Tin Plates.—℔ box gold		**Copper.**—	℔ ℔
I. C. Char. 10x14....	$7·75	Ingot....	23½c
I. C. Coke 10x14....	7 00	Bolt....	30c
Char. Roof. IC. 14x20.	7 25	Sheathing....	30c
Coke " IC, 14x20.	6 25	**Lead.**—	℔ ℔
METALS.		Pig....	7½c
Pig Tin.— ℔ ℔., gold		Sheet & Pipe....	8 1-10c
Banca....	21c	**Zinc.**—Sheet..℔ ℔	10½c
Straits....	19½c	**Spelter**.... ℔ ℔	7½c
English....	19½c	**Antimony**, gold ℔ ℔	18½c

ST. LOUIS.

Corrected weekly by Semple, Birge & Co.

Apple Parers.—Conqueror....℔ doz, $7 75
Hudson's Rotary...." 7 75
Axes.—Wm. Mann's, Red Warrior....℔ doz $11 50
Wm. Mann's, W. Stewart's...." 11 00
" C Marshall...." 10 50
" Handled...." $5 extra
" Double Bitted...." 2. 50
H. L. B. & Co.'s, L. & Co...." 11 50
" Pioneer...." 12 00
" James & Co...." 11 00
Hunt's...." 13 00
Axles.—"Jones, Henry & Co.'s" Patent Lubricating, Half Patent, Swelled Taper, Plain Taper and Concord Axles....dis 10 & 5 %
Common Axles (Pat. Lubricating), 1½ inch and upward....℔ ℔. 6½c.
do. less than 1½ inch...." 7 c.
Bellows.—Best St. Louis make..60c ℔ in. dis 20&2½ %
Bells.—Troy, Church, School and Farm Bells..℔ ℔ 42c
"Improved Amalgam Bronzed," 15 in., $3·00; 17 in., $4·00; 19 in., $6·00....net
Belting.—"Boston Belting Co.'s Rubber....dis 40 %
"Bradford & Sharp's" Oak-Tanned Leather....dis 30 %
Bolts.—Arms, Bell & Co.'s Carriage & Tire..dis 70&10 %
Arms, Bell & Co.'s Machine....dis 30&10 %
Butts.—Western Butt Co.'s new list—
Narrow Fast Joint....dis 25&10 %
Broad Fast Joint....dis 35&10 %
" Loose "....dis 45&10 %
Reversible....dis 40&10 %
" Japanned and Silver Tipped....dis 45&10 %
Loose Joint "Acorn" " "....dis 45&10 %
Wheeling Hinge Co.'s W't Fast Joint Nar....dis 30 %
" " " Broad....dis 35 %
" " Loose Joint....dis 35 %
" " Reversible....dis 35 %
" " Table & B'k Flaps....30 %
Churns.—Julian, No. 2, $7·00; No. 3, $7·50; No. 4, $8·50....dis 25 %
Cider Mills.
American Senior, $40·00; Am. Junior, $25·00....dis 20 %
Corn Knives.—Dunn Edge Tool Co.'s Clip....℔ doz 5 00
Seymour Mfg. Co.'s Solid Steel Back...." 4 00
Corn Shellers.—Sandwich Mfg. Co.'s—
Power Shellers....dis 10 %
Hand Shellers....Special rates
Cotton Gins.—The Carver, 10 in. Saw, $4 a Saw..dis 15 %
12 in. Saw, $4·50 a Saw....dis 10 %
Crow Bars.—Steel Pointed....℔ ℔ 6½c
Drag Saw Machines.—
Culver's Iron Drag Saw....dis 10 %
Robinson's Patent Sweepstakes Drag Saw....dis 10
Fanning Mills.—Nash & Cutt's....dis 20 %
Feed Cutters.—Improved Burdick National...dis 20 %
Sanford No. 1, $10 75; No. 2, $8 00....net
Files.—Black Diamond, Mill....$5·00 £ currency.
" Bastard....5·00 £ currency.
" Taper....5·00 £ currency.
Forges.—Keystone Portable Forge Co.'s....dis 12½ %
Forks and Hoes.—
Auburn Mfg. Co.'s Hay and Manure Forks....dis 10 %
" " Handled Hoes....dis 30 %
Garden Seed Drills and Wheel Hoes.
Allen's Double Wheel Hoe....dist 5 %
" Planet Drill, Nos. 2 and 3....dis 15 %
" Combined Drill and Wheel Hoe....dis 15 %
Grinding Mills.—Challenge Feed Mills....dis 15 %
Sedgebeer's Nonpareil Mills....dis 15 %
Hammers.—Masons' Hammers....℔ ℔ 30c
Smiths' Hand....20c
Handles.—No. 1 Fork, Hoe and Rake....dis 20 %
No. 2 Fork, Hoe and Rake....dis 40 %
Harrow Teeth.—1 inch iron....℔ ℔ 4½c
⅞ and ¾ inch iron....4½c
Barbed or Headed....½c extra
Hay and Cotton Presses.—
Dederick's Railroad....nett list
" Perpetual....nett list
Hay Knives.—
Dunn Edge Tool Co.'s....℔ doz $15 00—dis 15&5 %
Lightning (Weymouth's Patent)....℔ doz $20 00
Hinges—
Wheeling Hinge Co.'s Strap & T....dis 33⅓&10 %
Horse Hay Fork.—Nellis' Harpoon....dis 25 %
Horse Nails.—National Patent Pointed....20c rates
National Patent Pointed, extra finished....22c "
Horse Powers.—Pitts or Carey's Patent....dis 10 %
Wheeler's Railway....dis 10 %
Sandwich Lever....dis 10 %
Horse Rasps.—Heller Bros....dis 45 %
"Black Diamond"....$6·00 to the £ currency
Horse Shoes.—
Rhode Island (Perkin's Pattern)....℔ keg, $5 50
" Mule...." 6 50
" Trotting Shoes...." 8 00
Tredegar Horse....per keg $5 50
" Mule....per keg 6·50
Hose.—
Boston Belting Co.'s Rubber Medium Sizes, dis 30&10 %
" " " Small Sizes, Hydrant....dis 40 %
Ice Tools.—W. T. Wood & Co.'s Saws....new list net
W. T. Wood & Co.'s Chest Hatchets....new list net
" " Axes....new list net
" " Loading Tongs....new list net
" " Medium, Small and Family Tongs....new list net
" " Chisels, Hooks and Grapples....new list net
Mattocks and Grub Hoes.—
Klein, Logan & Co.'s Mattocks...℔ doz $13 00 @ 15
" Grub Hoes, oval eye...." 10 00 @ 11 50
Money Drawers.—
Pierpont & Co.'s Excelsior....per doz $40·00 net
Nails.—Wheeling....$3 15 rates
Packing.—Boston Belting Co.'s Rubber, Plain..dis 30 %
Boston Belting Co.'s Rubber, Pure....dis 25&5 %
" " No. 2 Plain....dis 40 %
" " Round and Square....dis 10&10 %
Picks.—Klein, Logan & Co's Railroad and Clay....℔ doz $9 30 @ 11 00
Klein, Logan & Co.'s Coal...." 7 45 @ 8 40
" " Poll...." 12 60 @ 15 50
" " Stone...." 14 40 @ 14 90
" " Tamping...." 14 75 @ 15 35
" " Miners' Drifting...." 10 25 @ 12 80
Plows.—Avery's Cast and Steel....dis 20 %
Collins Cast Cast Steel....new list net
Pekin Steel....new list net
Post Hole Augers.—Clark's Patent—
No. 1, ℔ doz. $27; No. 2, $30; No. 3, $32....dis 20 %
Pulleys.—5 inch....per doz $4·25 net
4 inch....per doz 3·25 net
Nellis' Patent....new list dis 15 %
Pumps.
St. Louis, Farm, Patent Metal Lined...new list dis 50 %
Rakes.—Paddock's Premium Sulky....$28 00 net
St. Louis Revolving 14 tooth....4 65 net
" " 16 "....4 90 net
" Hand Hay Rake....dis 20 %
Reaper Knives and Sections.—
Geo. Barnes & Co.'s Knives....dis 25 %
" " Sections....dis 40 %
Road Scrapers.—Steel....dis 25 %
Cast Iron....dis 10&5 %
Sad Irons.—Monitor Brand, Silver Polished..℔ ℔ 4½c
Sash Weights.—Standard Solid Eyes....℔ ℔ 4c
Saws.—Curtis & Co....dis 10 %
Scythes.—Dunn Edge Tool Co.'s....new list dis 20&5 %
Scythe Stones.—No. 1 Ind'n Pond ℔ gr's, $7 00; Extra Indian Pond " 7 50; Premium " 10 50; Diamond Grit " 13 00 } dis 25 %
Shovels and Spades.—H. M. Myers & Co....dis 30 %
Grain Scoops, Pat. Cor'd Straps H. M. M. & Co...dis 30 %
" " " M. Rowland & Co..dis 30 %
" " " O. Ames & Son..dis 20 %
Sledges.—Smith's Stone or Coal Sledges—
Steel Face Polished....℔ ℔ 15c
Solid Cast Steel...." 25c
Snaths and Cradles.—Seymour Mfg. Co.'s..dis 20 %
Sorghum Machinery.—Bell Cane Mills....dis 15 %
Scantlin's Seamless Evaporators....dis 10 %
Springs.—Cleveland Spring Co.'s—
Carriage and Express....dis 12½ %
Blue Seat Springs....dis 15 %
Vises.—Solid Box....℔ ℔ 16c
Wilson Mfg. Co.'s....dis 15 %
Wheelbarrows.—Railroad & Garden....new list net
Wrenches.—Coes' Genuine....dis 33⅓ %
Coes' Pattern....dis 50
Wagons.—Whitewater Farm Wagons—
Thimble Skein....No. 3, $74; 3¼, $78; 3½, $79
Iron Axle....No. 1⅛ $78; 1¼, $81; 1½, $88

St. Louis Metal Market.

(Corrected Weekly by Messrs. R. Sellew & Co.)

Tin Plate.

IC, 10x14, Best Char..	$ 9·50	IX, 14x20, Roofing....	$11·50
IX, 10x14, " ..	12·00	IC, 20x28, "	19·00
IC, 12x12, " ..	10·00	IX, 20x28, "	23·50
IX, 12x12, " ..	12·50	IC, 10x14, Coke...	8·50 @ 9·00
IC, 14x20, " ..	10·00	IC, 14x20, "	9·00
IX, 14x20, " ..	13·00	IC, 10x20, "	14·00
IC, 14x20, Roofing....	9·00		

Usual difference for odd sizes.

Block Tin.

Large Pigs....	25c	Bars....	27c
Small " L. & F....	26c		

Sheet Zinc.
Casks....℔ ℔ 10½c | Sheet....℔ ℔ 11c
Solder.
No. 1, Refined, in bars or plate....16c
No. 2, " " "....15c
Pig Lead....7½c
Sheet Copper—14 to 100 lbs. Sheets 30x60....31c
10 to 12 lbs., " " and 20x72....32c
6 to 9 lbs., " "....35c
Tinned, 14 and 16 oz. 14x48....32c
Planished, 14 and 16 oz. 14x48....39c
" No. 7, 8 and 9....41c
Copper Bottoms....34c

Sheet Iron.—	Com'n.	Sm'th.	Char'l.	Jun'ia.
No. 16 to 20....	4½c	4½c	6½c	7½c
No. 22 to 24....	4½c	4½c	6½c	7½c
No. 26....	4½c	5 c	6½c	8 c
No. 27....	4½c	5½c	6½c	8½c

Galvanized Iron....dis 30 %
Iron Rivets....dis 25 %
Iron Wire....dis 35 %
Coppered Pail Bail Wire....dis 20 %
Copper Rivets and Burs....dis 20 %
Genuine Russia Iron.
Perfect—No. 9, 10, 11, 12....per lb. 17c
Stained—No. 9, 10, 11, 12....per lb. 16c
Tare 22 lbs to Bdle. For less than 1 Bdle. add 1c. ℔ ℔.
Retinned Stamped Ware....dis 20 %

CHICAGO.

(Reported by Frank Sturges & Co., 72, 74 & 76 Lake St.)
September 10, 1875.

Tin Plate.—

10x14, IC, Ch'l. Good.	$	14x20, IX, Ch'l Best.	$13 00
10x14, IC, " Best.	9 50	14x20, IXX, " "	15 50
10x14 IX, " "	12 00	14x20, IXXX, " "	18 00
12x12, IC, " "	10 00	DC, 100 Plate, " "	9 50
12x12, IX, " "	12 50	DX, " "	12 00
14x20, IC, " "	10 50	DXX, " "	14 50
		DXXX, " "	17 00

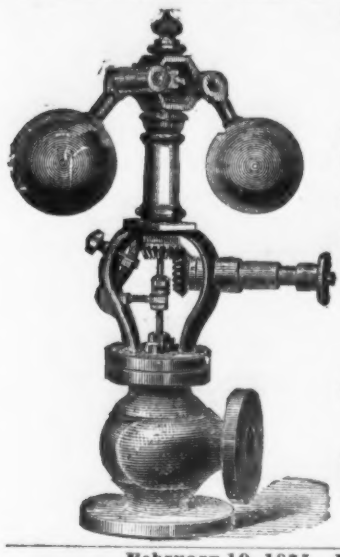
Roofing IC, Charcoal, Best....9 00
Roofing IX, Charcoal "....11 50
20x28, IC, Charcoal Roofing, Com....18 00
20x28, IC, " Good....18 50
20x28, IC, " Best....19 00
20x28, IX, " "....23 50
10x14, IC, Coke Plates....8 50 to 8 75
14x20, IC, "....9 00 to 9 50
10x20, IC, "....14 00
Block Tin.—
Large Pigs....27c | Bars....29c
Small....28c
Zinc.—Sheet, 500 to 1000 lb. Casks....10½c
Loose Sheets....11c
Slab Zinc or Spelter....7½c
Copper.—Bottoms....34c
Sheathing....32c
Planished....39c
" Boiler lengths....41c
Ingot....—
Bolt....35c
Braziers' Sheets.—
30x60, 6 & 7 lbs....℔ ℔ 39c | 30x60, 10 & 12 lbs...℔ ℔ 35c
30x60, 8 & 9 lbs...." 37c | 30x60, 15 to 100 lbs." 32c
Solder.—F. S. & Co.'s make.
Best Fine....20c
No. 1....19c
Roofing....17c
Braziers' or Spelter Solder....25c
Antimony....18c
Babbit Metal—F. S. & Co.'s....16c
No. 2....14c
Sheet Iron.—

	Common.	Smooth Com.	Smooth Charcoal.	Smooth Juniata
No. 24....	4½c	5½c	6½c	8½c
25 & 26...	4½c	5½c	7 c	9 c
27....	4½c	6 c	7½c	9½c

Galvanized Iron....dis 30 %

No. 16 to 20....	12c	No. 27....	15c
21 to 24....	13c	28....	16c
25 & 26....	14c		

Russia Iron.—
Perfect....17c | No. 1 Stained....16c; In Sheets, 1c. higher.
American Russia.—
A....14c | B....11c; In sheets, 1c higher.
Lead.—
Pig....7½c | Lead Pipe, in full coils..8½c
Bar....8½c | Lead Pipe, when cut..9½c; Sheet Lead....9½c
Wire—Bright....dis 35 %
Coppered....dis 30 %



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We will put our Governor on any Engine, and guarantee it to prove itself superior to all others.

If, after a fair trial, it does not, we will take it off at our own expense.

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ALSO,

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AND

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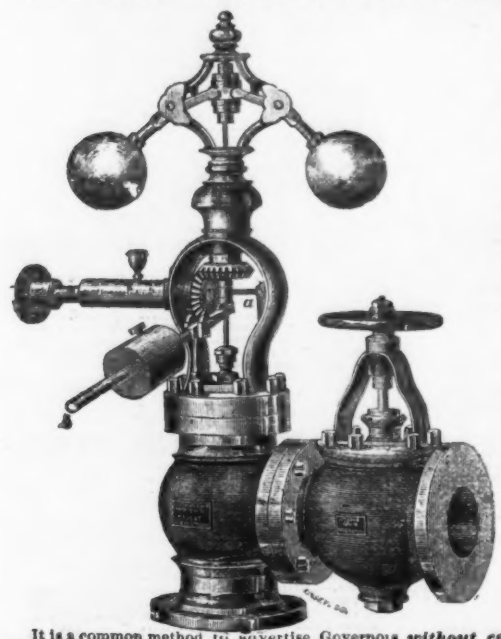

☞ When Governors are ordered, be particular and say Governor with Stop Valve, or without Stop Valve; and either Black, Finished or Portable, as you may require, and with or without Lever Attachment.

For dimensions and other particulars send for Illustrated List.

Capacity of Valve or Diameter of Steam Pipe in Inches.	Price, Black.	Price, Bright Finish.	Price, Portable.	Price of Lever Attachment for altering speed.	Price of Stop Valve.
¾	18·00	20·00	17·00	..	..
¾	20·00	22·00	19·00	..	..
1	24·00	27·00	22·00	2·00	5·25
1¼	29·00	32·00	27·00	2·25	6·00
1½	34·00	38·00	31·00	2·50	8·50
2	41·00	46·00	38·00	2·75	11·50
2¼	47·00	54·00	..	3·25	16·00
2½	50 00	57·00	47·00	3·50	17·00
2¾	55·00	62·00	Portable made than 2¾ in.	3·75	19·00
3	62·00	70·00		4·25	22·00
3¼	71·00	80·00		4·50	27·00
4	81·00	92·00		5·00	32·00
4½	91·00	108·00		5·50	37·00
5	102·00	114·00		6·00	42·00
5½	116·00	129·00		6·50	48·00
6	134·00	148·00		7·00	55·00
7	160·00	176·00		8·00	69·00
8	199·00	219·00		9·00	82·00
9	230·00	255·00	No Larger	10·00	..

No Charge for Boxing & Cartage.

It is a common method to advertise Governors *without cost*, unless satisfactory to the customer, and then charge *High Prices* for doing what any good Governor will do. Various Governors inferior to the "Judson" are sold in this way, operating well enough for three months, to insure collection of the pay, but becoming useless after a year's wear—their construction lacking durability. The Judson Governor is guaranteed to be not only the best Regulator of Steam Engines, but also the most durable Governor made. Parties in buying other Governors should stipulate that their durability be guaranteed, and should also take care that they do not, for much inferior Governors, pay higher prices than those shown in the above list. We guarantee the Judson Governor will do all any other Governor can do, and in Accuracy and Durability—the main essentials—we guarantee it shall do more.

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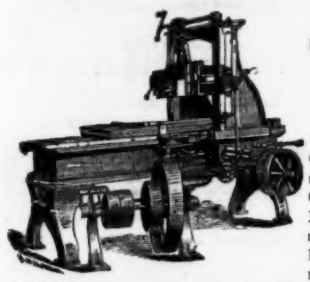

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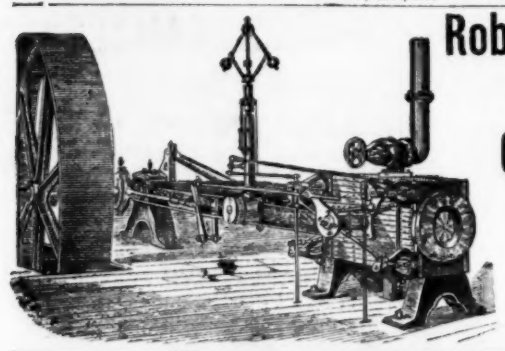

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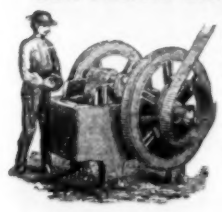

For reducing to fragments all kinds of hard and brittle substances, such as STONE for making the most perfect MCADAM ROADS, and for making the best CONCRETE. It breaks stone at trifling cost for BALLASTING RAILROADS It is extensively in use in MINING operations, for crushing

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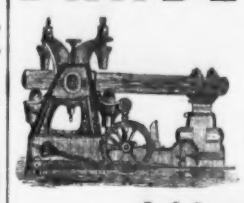

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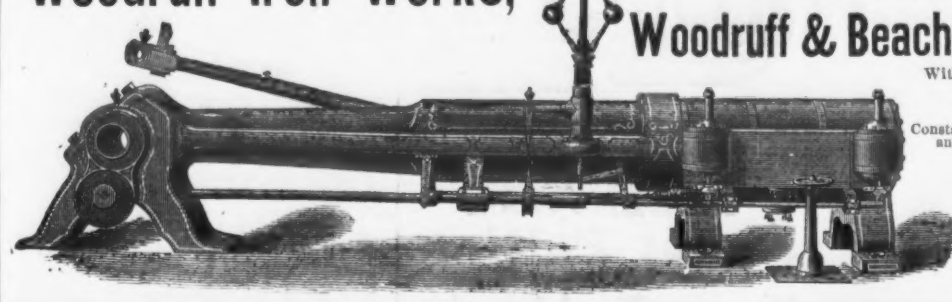

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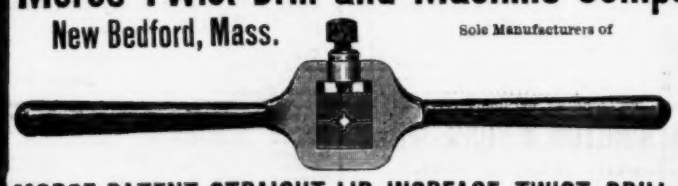

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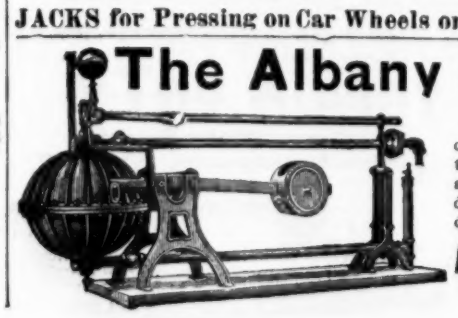

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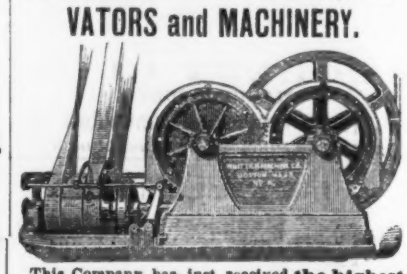

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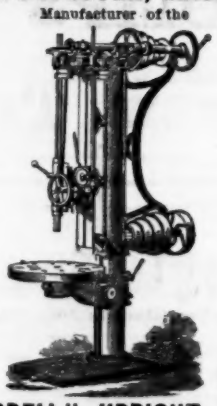

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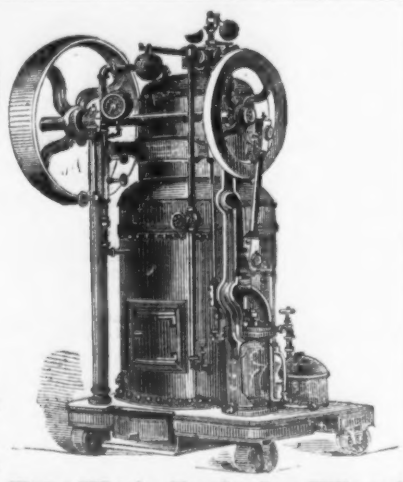

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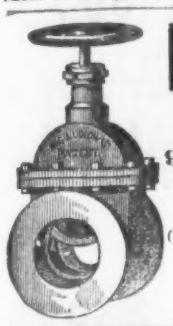

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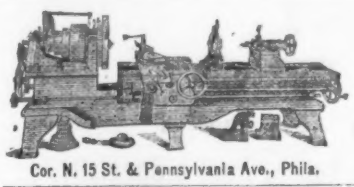

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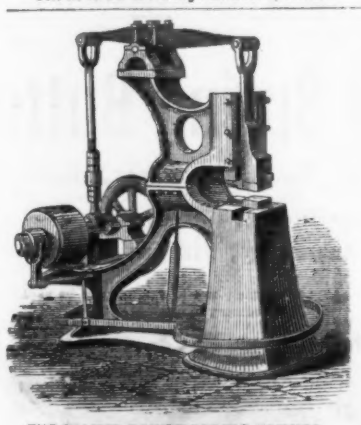

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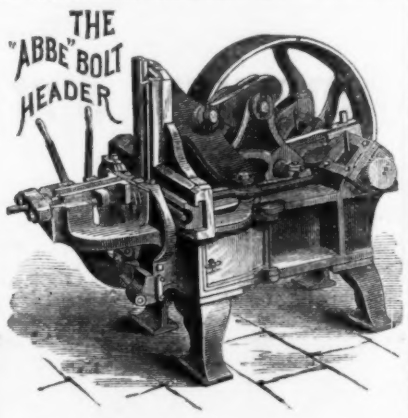

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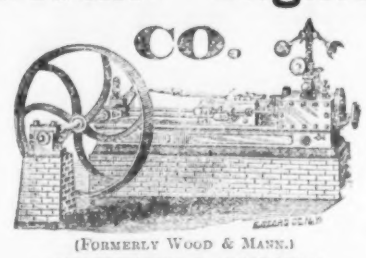
UTICA Steam Engine CO.



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STATIONARY & PORTABLE

STEAM ENGINES.

The best and Most Complete Assortment in the Market.

These Engines have always maintained the very highest standard of excellence. We make the manufacture of Engines, Boilers and Saw Mills a specialty. We have the largest and most complete works in the country, with machinery specially adapted to the work.

We keep constantly in process large numbers of Engines, which we furnish at the very lowest prices and on the shortest notice. We build Engines specially adapted to Mines, Saw Mills, Grist Mills, Tanneries, Cotton Gins, Threshers and all classes of manufacturing.

We are now building the celebrated Lane Circular Saw Mill, the best and most complete saw mill ever invented.

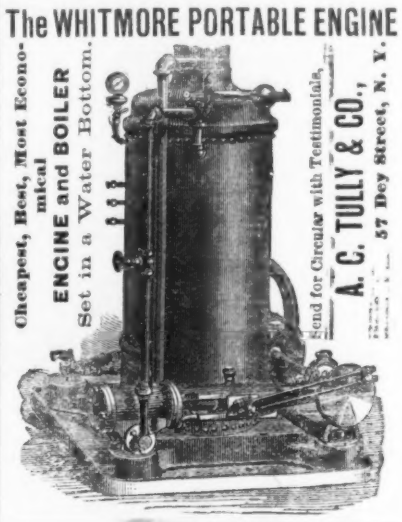
We make the manufacture of Saw Mill Outfits a special feature of our business, and can furnish complete on the shortest notice.

Our aim in all cases is to furnish the best machinery in the market, and work absolutely unequalled for design, economy and strength.

Send for Circular and Price List.

UTICA STEAM ENGINE CO.,
UTICA, N. Y.

The WHITMORE PORTABLE ENGINE



LATHES, PLANERS,

and other

Machinists' Tools.

For Sale by

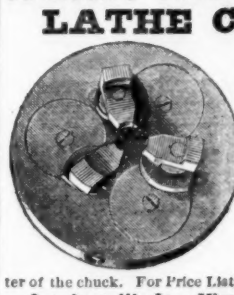
New Haven Mfg. Co.,
NEW HAVEN, CONN.

MINERS' CANDLES.

Superior to any other Light for Mining Purposes. Manufactured by

JAMES BOYD'S SONS,
Nos. 10 & 12 Franklin St., N. Y

JOHNSON'S PATENT UNIVERSAL LATHE CHUCK.



We invite attention to the superior construction of this chuck. Its working parts are **absolutely protected from dirt and chips.** It is strong, compact and durable, and will hold the greatest variety of work, as the jaws are adjustable with a range the full diameter of the chuck. For Price List address,

Lambertville Iron Works, Lambertville, N.

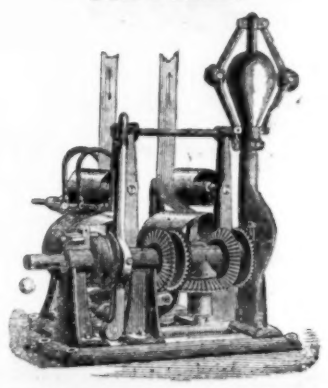
DIFFERENTIAL GOVERNOR.

The HARTFORD GOVERNOR CO.,

Sole makers of the

Weaver Differential Governor,

FOR WATER.



Powerful, positive, radically new. Introduced and working with complete success. Write us for circular, etc., at

HARTFORD, CONN.

TUBAL SMELTING WORKS,

760 South Broad Street, PHILADELPHIA.

PAUL S. REEVES,

MANUFACTURER OF

ANTI-FRICTION METALS.

XXX Genuine	40c	C	20c
XX	38c	D	15c
X	35c	E	13c
A	30c	F	11c
B	25c		

"Note."—The above are my standard mixtures, and have given satisfaction wherever used, but I am prepared to make Anti-Friction Metal of any quality or mixture desired by the purchaser.

BRASS CASTINGS, 21 to 35c. | **INGOT BRASS,** 19 to 28c. | **BRASS TURNINGS AND OLD METALS WANTED.**

ESTABLISHED 1842.

WM. & HARVEY ROWLAND,

PHILADELPHIA,

P. O. Address: Frankford, Philad'a. | MANUFACTURERS OF ALL KINDS OF

Elliptic, Platform AND C Springs,

MADE EXCLUSIVELY FROM

SWEDISH STOCK, OIL-TEMPERED and WARRANTED.

Swedish Tire, Toe, Blister and Spring Steel.

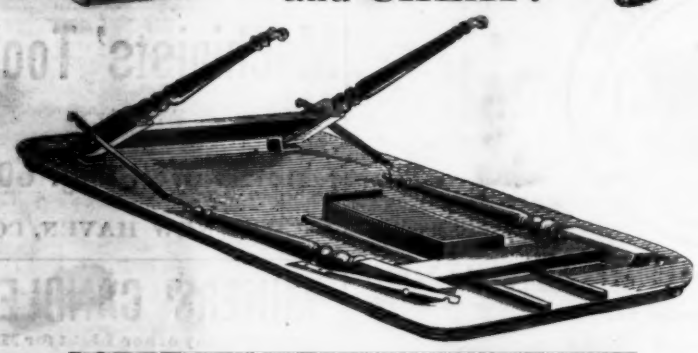
CAST SPRING AND PLOW STEEL.
CAST SHOVEL, HOE AND MACHINERY STEEL.

OXFORD TOE, SLEIGH, TIRE AND SPRING STEEL.
BESSEMER SHOVEL AND PLOW STEEL.
BESSEMER MACHINERY AND CULTIVATOR STEEL.

RE-ROLLED NORWAY SHAPES.
NORWAY NAIL RODS ROLLED AND SLIT FROM SUPERIOR BRANDS

MAIRS' PORTABLE TABLE.

FIRM, DURABLE and CHEAP.



LARGE DRAWER ALWAYS SECURE.

YARD MEASURE, and Folds like a Pocket Knife. Agents wanted. Terms liberal.

JOHN C. MAIRS, - - - Troy, N. Y.

Ausable Horse Nail Co.,

MANUFACTURERS OF

HAMMERED,

Hammer Pointed, Polished & Blued

HORSE NAILS,

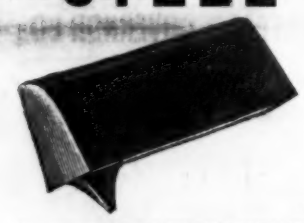
FROM

BENZON IRON.

Orders promptly filled at lowest market rates.

ABRAHAM BUSSING, Secretary,
35 Chambers Street, New York.

STEEL TOE CALKS.



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ABRAHAM BUSSING,

35 Chambers St., New York,

BY

SWEETS MFG. CO.

Warranted to weld and to harden, and to be equal, if not superior, to any made.

GLOBE NAIL COMPANY,

MANUFACTURERS OF

Pointed, Polished & Finished Horse Shoe Nails.

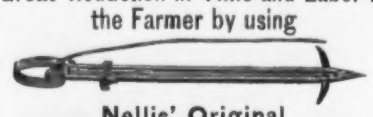
Recommended by over 20,000 Horse Shoers.

All nails made from best NORWAY IRON, and warranted perfect and ready for driving. Orders filled promptly and at lowest rates by

GLOBE NAIL CO., Boston, Mass.

NEW TIME TABLE.

Great Reduction in Time and Labor to the Farmer by using



Nellis' Original

HARPOON HORSE HAY FORK,

Nellis' Grapple.

Grapple and Pulleys; also, Nellis' Patent Stacker and Method of conveying Hay, Straw, &c. A ton of Hay can be delivered in three to five minutes to any part of Mow or Stack. The right of Stacker and Conveyer granted FREE to the Farmer purchasing our Horse Hay Fork and Fixtures during season of 1875.

With it Pulleys can be attached or detached to rafter or beam, without the use of a ladder.

NELLIS' PULLEY,

Improved Wrought Frame, Prepared Wood Wheel. Warranted superior to any Horse Fork Pulley offered in the market.

A trial of these goods will convince any farmer that he cannot afford to dispense with them, as their entire cost is often times saved by a single day's use.

Also manufacturers of all descriptions

Of Agricultural Steel & Iron,

Steel Tempered by Nellis' process to suit every kind of soil.

Prices and descriptive Catalogues of our goods furnished free. Address,

A. J. NELLIS & CO.,
Pittsburgh, Pa.

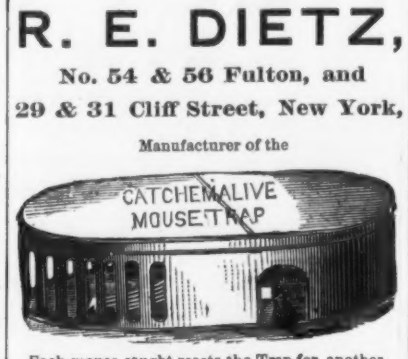
SEMPLE, BIRGE & CO., St. Louis, Mo., General Agents for the Southwest.

ESTABLISHED 1840.

R. E. DIETZ,

No. 54 & 56 Fulton, and
29 & 31 Cliff Street, New York,

Manufacturer of the



Each mouse caught resets the Trap for another.

TUBULAR

And Other

Patent Lanterns

BRASS AND IRON

Jack Chains.

STANLEY G. FLAGG & CO.

PHILADELPHIA, PA.

Office and Warehouse,

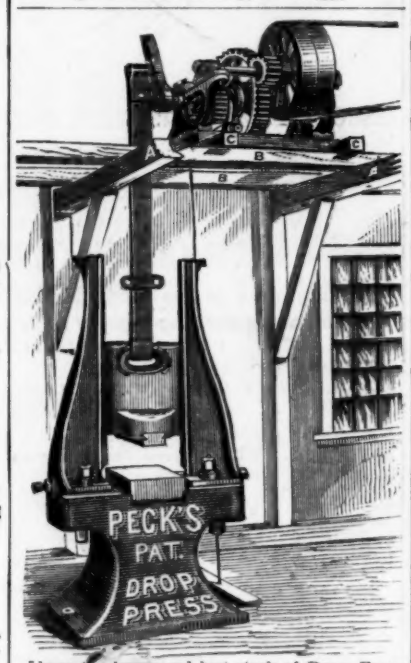
No. 216 & 218 N. THIRD ST.

Manufacturers of

STEEL CASTINGS.

A Substitute for Steel and Wrought Forgings.

☞ Circulars sent on application. ☜



I have the largest and best stock of **Drop Press Patterns** in the country—suitable for Forging, and all kinds of Sheet Metal work.

WHY THE BEST:

It requires less power, works faster, gives a harder blow with same weight of hammer, the rebound of the hammer is caught without lessening the force of the blow, the blow is uniform and not affected by variations in the speed of the driver. It is always in order. **The Drop Press a speciality.**

MILO PECK, New Haven, Conn.

GAS FIXTURES.

Lamps, Bronzes,

Equal to any made, in great variety, all of our own manufacture.

BRADLEY & HUBBARD MFG. CO.,

SALESROOMS:

21 & 23 Barclay, cor. Church St., NEW YORK.

SCRANTON

Brass Works,

J. M. EVERHART,

Manufacturer of **Brass Work for Water, Gas and Steam.** Brass Castings and Jobbing promptly attended

SCRANTON, PA.

DIXON'S PURE PLUMBAGO

FOR

LUBRICATING.

Put up in Boxes containing 5, 10, 25 and 50 lbs. and in barrels of 200 lbs.

This article is prepared with great care, has more body than that prepared by any other party, and is as near perfect as possible.

We were the first manufacturers to put up Plumbago as a Lubricator: and the experience of years has shown that it will save more than half the expense of oil or grease, will absolutely cool off a hot journal, and save nearly all the wear, the axles or shafts being glazed over with it, and running almost without wear. A car axle will run four or five times as long if our Lubricating Plumbago is used freely. A second-class article, however, is worse than none, because it contains a grit that will wear both the shaft and the box.

If Engineers, Experts and Purchasing Agents knew how much wear and power would be saved by its use, no shaft or axle would revolve without it; every shop and car would have it at hand.

The Journal of the Franklin Institute says:

"Every one knows that for heavy machinery plumbago is a good lubricant, but every one does not always think of applying it where it would serve best. It may be of value to some of our readers to know that a planer whose bed-plate required the force of eight men to slide it when lubricated with the best ordinary material, was easily shifted with one hand when plumbago of good quality was applied."

It is pure, very finely pulverized, is free from grit, and is prepared by the most expert manufacturers of **PLUMBAGO GOODS** in the world. Send for envelope sample.

THE JOS. DIXON CRUCIBLE CO.,

ORESTES CLEVELAND, President,

237, 239, 241 and 243 Railroad Ave., 250, 252, 254 and 256 Wayne Street, | **JERSEY CITY, N. J.**

Russell, Burdsall & Ward,

PORT CHESTER, N. Y.

Manufacturers of

Carriage, Tire, Plow, Stove

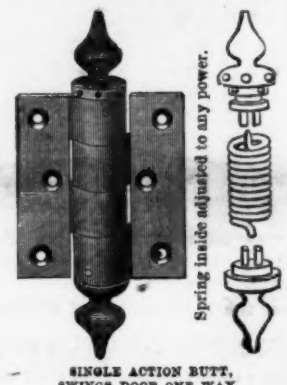
AND OTHER

BOLTS.

Carriage Bolts made from Best Square Iron, a Specialty.

THE

American Spiral Spring Butts



SINGLE ACTION BUTT, SWINGS DOOR ONE WAY.

Swing doors either way, allowing continual passing, and close them promptly, without noise.

Invaluable in cold weather, and in summer can be used as ordinary hinges.

Noiseless Double Action Butt, as seen upon a door, swinging it both ways.

Very Desirable

FOR

Stores, Banks & Churches,

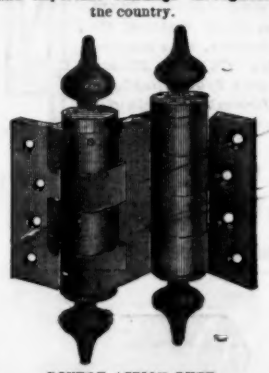
AND ALL

Outside Winter Doors.

Used on the

National Capitol, Patent Office, Treasury, Plymouth Church, A. T. Stewart's Stores, Booth's Theatre,

and important buildings throughout the country.



DOUBLE ACTION BUTT, SWINGS DOOR BOTH WAYS.

PRICE LIST OF MAY 1st, 1875.

Single Action.				Double Action.			
4 in.	No. 6,	₱ pair	$ 7 00	3 in.	No. 44,	₱ pair	$ 9 00
5 "	11,	"	8 00	4 "	33,	"	13 00
6 "	16,	"	9 00	5 "	55,	"	15 00
7 "	22,	"	10 00	6 "	66,	"	17 00
8 "	28,	"	12 00	7 "	88,	"	20 00
10 "	33,	"	15 00	10 "	99,	"	25 00
12 "	44,	"	18 00	12 "	100,	"	30 00

Send for Descriptive Circular and Price List.

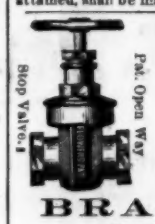
AMERICAN SPIRAL SPRING BUTT CO., 82 Beekman Street, N. Y.

DERBY SILVER CO., Derby, Conn.,

Manufacture the most reliable

SILVER PLATED SPOONS & FORKS.

They are plated by weight, and not by time or guess, containing 20 per cent. more silver than the usual standard, on a base of Nickel Silver, and finished by hand. Each article is guaranteed by the trade mark and warranted to give full satisfaction. We ask of the trade a fair and impartial test, assuring them that the high standard already attained, shall be maintained. Send for Catalogue and Price.



Schofield's Pat. Gauge Cock.

HENRY C. MEYER & CO.,

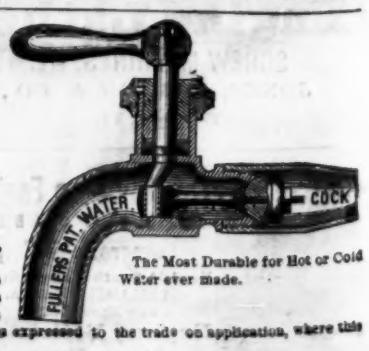
Manufacturers of

BRASS WORK

For Water, Gas and Steam.

Importers and Dealers in **PLUMBERS' MATERIALS,**

46 & 48 Cliff Street, N. Y.



The Most Durable for Hot or Cold Water ever made.

Specialties manufactured and controlled by us: Fuller's Patent Faucets and Mineral Water Cocks; Murdock Hydrants and Street Washers; Flower's Open Way Valves; Schofield's Gauge Cocks; Hall's Lock Gas Cocks. Illustrated Catalogues expressed to the trade on application, where this advertisement is referred to.